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A CLOSER LOOK

System/38 software earns kudos

The unique architecture of IBM's System/38 for its capabilities of traditional 370-style design, as our April 30 Closer Look noted, users, Computerworld has found, are also praising the machine's equally unique software characteristics, which they claim offer significant productivity benefits.

By Paul Gittle
CWI Staff

Last year, the data processing department at Minneapolis-based Braden Steel Corp. moved most of its operations from an IBM 370/145 to an IBM System/38. The migration required Braden—now Ecoschem—Energy Systems Corp. to scrap its entire software investment, throwing out tens of thousands of dollars worth of packaged software and years of programming effort.

Today, Ecoschem DP manager Jack Silver has only one regret. "Our biggest gripe is that we didn't do it soon enough," he said. "I think [the migration] is the best thing we've ever done. Our response time on the System/38 is every bit as good as it was on the 370/145, and we do a lot more with it."

Silver is one of many System/38 users who have found that software development and maintenance is far better on the System/38 than on any other IBM computer. In interviews with Computerworld, users and vendors said that, despite incompatibility problems with other IBM programs, the System/38 software is so much better than anything else offered by IBM that it is often worth sacrificing even a major investment in existing 370 software.

"I've never seen anything out there that compares to the System/38," said Douglas Donath, vice-president of marketing at Creative Computer Resources, Inc., a Costa Mesa, Calif.-based vendor of System/38 software.

"But it's the best kept secret in the industry. In public, it's positioned as a minicomputer. But I think it's really a threat to the [IBM] 4300 and even 3090 series machines."

One perpetual problem for the System/38 has been its rebus classification. Many users say it performs like a mainframe. But it has

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Ford says no to Net 1000

Automaker's decision after six-month trial could damage AT&T system's future market viability

By Bob Wallace
Special to CWI

DEARBORN, Mich. — After a six-month beta test of the network, the nation's second largest automaker has decided against subscribing to AT&T Information Systems' Net 1000.

Ford Motor Co. spokeswoman Linda Lee said, "The evaluation has ended, and we have decided not to buy Net 1000 at this time." Although Ford officials would not comment on why they would not purchase the system, a company source said, "We needed a ubiquitous presence. Net 1000 doesn't have enough nodes."

Analysts who were contacted last week felt the decision by a user of Ford's size could be particularly damaging to the future

of Net 1000.

Tymshare, Inc. spokesman Stan Terra said that the contract to provide a parts locator application had not yet been inked. He explained that Tymshare, Inc. would provide the applications software and mainframe processing, while Tymnet, Inc. would provide the data communications link for the service.

"We are disappointed that [Ford] will not continue with Net 1000," commented Allen Rehert, director of network applications for AT&T Information Systems. "We feel good about what we've done and learned and about what Ford has learned," he said.

"This experience has increased our attention to this industry. We understand a lot

See FORD page 5

Packaged software, micros, OA spearheading DP budget rise

By Paul Gittle
CWI Staff

NEW YORK — Data processing budgets are on their way up next year at sites supervised by more than a dozen DP managers interviewed here last week. But the increases are less than spectacular, averaging between 5% and 10%, the managers said.

In random interviews at the Information Management Exposition & Conference (Info '84), managers pointed to packaged soft-

ware, microcomputer-related expenses and office automation as their leading cost gainers. But in contrast to prior years, personnel costs seem to be holding steady, they said.

The use of packaged software was seen as spearheading budget

increases at several installations. Alan McLean, director of MIS at Catholic Charities in Brooklyn, N.Y., said he hopes for a 10% budget increase, much of which will be spent buying packaged soft-

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TOP OF THE NEWS

Withdrawal symptoms. After stumbling upon a freak combination of input codes, three men allegedly stole \$40,000 from an automatic teller machine and were subsequently arrested. Page 8.

Make mine relevant. That is what corporate users said about in-house microcomputer training. Page 6.



On photo by J. Thompson

DP managers came in droves to polish their acts at Info '84 in New York last week and witnessed a cascade of product announcements, seminars and general hoopla. Stories begin on page 18.

Servicet-Pachard Co. replaced its Model 150 micro with two machines

ing disk system options and communications that provide expanded data exchange with IBM and IBM-compatible micros. Page 118.

CDC's abandoning IBM-compatible mart stuns users

By Tom Henshel
CWI Staff

Surprise and concern were the sentiments expressed last week by five users of Control Data Corp.'s line of IBM-compatible peripherals after learning that CDC last month abruptly decided to stop marketing its line of IBM-compatible peripherals to end users.

"We haven't sorted it out entirely," noted Marianne Thompson, director of the Office Services Division of Costa Costa County in northern California. Most of the disk drives installed at the county's Martinez data center were manufactured by CDC.

"It came as a shock; we had no indication," Thompson said. Her statement reflected what every other user contacted said: While everyone knew that CDC was having problems with its IBM 3380-compatible disk drive, the 33500, CDC gave no

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NEWSPAPER

NEWS

ATM code fluke spurs \$40,000 theft

By John Galtman
CW Staff

SPRINGFIELD, Mass. — Three local men who, police said, stumbled upon a freak combination of input codes that allowed them to make as many as 250 unrecorded withdrawals in one night, have been arrested and charged with stealing nearly \$40,000 from eight automatic teller machines (ATM) here.

Carrying some \$15,000 in cash stuffed into their pockets, underwear and shoes, Steven Jefferson, 18, and Steven Porter, 22, were arrested on Sept. 24 by Connecticut State Police as they tried to purchase airline tickets to Hawaii at Bradley International Airport in Windsor, Conn. According to Springfield Police Capt. Ernest Steiner, state police detained the two men, who were carrying no luggage and attempting to purchase the tickets with cash, because they fit the standard profile of airline hijackers.

Steiner said state police contacted authorities here, who asked that the pair be returned to Springfield because they were wanted on outstanding warrants — Jefferson for possession of marijuana with intent to distribute and Porter for receiving stolen property. Springfield police then called local banks to determine if any had discovered large cash thefts. At about the same time police contacted the Springfield Institution for Savings, a spokesman there said, bank officials were beginning to investigate a nearly \$40,000 loss that

had occurred over the previous weekend.

Steiner said a police investigation showed that the two men and Robert Arnold, 17, had made some 250 withdrawals in one night using Forter's bank card from eight of the institution for Savings' 12 IBM-manufactured ATMs. Police then arrested Arnold and confiscated his car, which they believe the teenager purchased with some of the stolen money.

At their arraignment in Springfield District Court, the trio pleaded innocent to one count each of larceny over \$100, Steiner said. Police also presented the case to a Hampden County grand jury, which, Steiner said, may shortly hand down indictments against the three men for conspiracy or multiple counts of larceny. Arnold was released on \$10,000 cash bail, while Porter and Jefferson were ordered held at the York Street Jail in Springfield.

Neither police nor bank officials would divulge precisely how the three men pulled off the theft. But Steiner told *Computerworld* that, during a routine transaction, Porter appeared to have chosen upon a freak flaw in the ATM's security. He apparently discovered an input code that enabled him to make repeated cash transactions that somehow did not register as withdrawals, Steiner said.

The spokesman told CW last week that the problem did not involve the IBM equipment but was related to a flaw in a third-party ATM software package that had been customized for use by the bank.

Two face charges in Apple scam

By Kathleen Burton
CW West Coast Bureau

SAN FRANCISCO — Two Taiwanese businessmen were indicted here last week by a federal grand jury for allegedly importing and selling counterfeit Apple Computer, Inc. Apple II micros and parts, violating U.S. copyright laws.

U.S. Attorney Joseph Rucanelli said the indictments are the first on the West Coast to include smuggling as well as criminal copyright infringement in a computer crime case. The only other similar case filed in the U.S. occurred in February in Philadelphia, where six persons and five companies were charged with copyright violation and with smuggling copies of unassembled counterfeit Apple IIa from Taiwan into the U.S.

Teh Yi Huang and Ren Tao Yu were indicted in San Francisco following an undercover investigation begun in October 1983 by U.S. Customs Service agents, San Jose Computer and the U.S. Attorney's office in San Jose, Calif.

Yu, who insiders say cooperated with authorities during the investigation, has not been arrested. The sole owner of A-Tek Enterprises, an electronics distribution firm in Cupertino, Calif., Yu was charged with selling a counterfeit Apple microcomputer to undercover agents for \$500 in 1983 and attempting to sell 30 more.

Huang, sole owner of the Data Borgent Corp., a small electronics warehouse in Cupertino, Calif.; was arrested by the U.S. Customs Service and is being held in San Francisco County Jail pending arraignment. He was charged with attempting to sell counterfeit Apple microcomputers to agents and also charged with filing false invoices and customs statements on a 16-carton shipment of circuit boards, which was seized by customs agents last December at the San Francisco International Airport.

The U.S. attorney's office disclosed that it has evidence linking Huang to other computer smuggling activities in Los Angeles, Florida and Philadelphia. If convicted, Huang faces up to \$65,000 in fines and 19 years in prison. Yu could be sentenced to \$80,000 in fines and 17 years in prison.

New news is good news

Just as we try to give our readers the most complete information available, new good news and features stories never reach us.

Are you involved in an unusual application of IT technology in your company? Have you implemented innovative cost-saving strategies in computing in your R&D shop, but hesitated to do so? Would there any growing developments and new ideas about yourself? Are you aware of...

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Fierce opposition from banks has stalled a Treasury Department proposal requiring the banks to report foreign financial transactions/8

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Resistance is the byword when corporate microcomputer trainers set up an in-house course, according to several trainers interviewed recently/8

OW at Info '84 — The people: MIS managers need to become better marketers within their departments if they want their services recognized in the company budget, one consultant told attendees... While many companies talk about local-area networks, few have installed or plan to install them... DP managers said measuring productivity is difficult, but necessary... Successful computer system contracts between user and vendor are a guide to implementation and not a threat to vendors, an audience here was told... DP managers would like to have better control of everything from typewriter ribbons to mainframe upgrades, according to interviews conducted here... Two users

offered guidelines for creating a data base model and then selling it to management... Computer users will continue to benefit from price/performance gains resulting from technology advances and further use of standards, NCR Corp.'s president said in a keynote address... A combined voice/data system, not a micro, should be on an executive's desk, according to one manager here... The benefits a company gets from information technology spending depends on its strategic position, a recent report suggested/10-18, 22-27

— The products: Two communications controllers, a workstation and microcomputers were among the hardware introductions... A micro-mainframe link and a data base management system topped the software product announcements/14, 19

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Newspaper reporters in the South are monitoring political candidates and their financial sponsors with the help of

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VDTs do not emit radiation in amounts known to be harmful, according to a West German scientist/30

A number of solutions to problems in ergonomics were suggested by attendees of the recent World Conference on Ergonomics in Computing Systems/32

One U.S. congressman said Congress will hold hearings on the policy issues raised by the plans of several federal agencies to establish electronic filing systems/36

High-technology entrepreneurs seeking financing for their start-up companies are facing tough scrutiny from venture capitalists, a California high-tech lawyer said recently/38

Corporate treasurers using microcomputers linked to minis and mainframes will be able to expand their role over the next five years, the president of a major financial firm said/40

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Ecuador recently became the second

country in South America to start a videotex service/43

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An Illinois town said it has saved \$250,000 annually after switching to a new computer system/52

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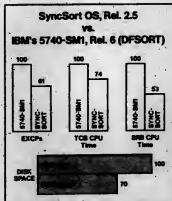
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- NEWS

IBM from page 1

generally been pigeonholed as a minicomputer. This is due largely to its small memory size and the fact that IBM's General Systems Division, the minicomputer arm of IBM's previous organization, sold the System/38 for many years.

Until recently, the memory constraint has been an issue. An entry-level System/38 Model 4 can contain as little as 1M byte of memory, most of which is set aside for the operating system. Before IBM's recent announcement of two high-end System/38 models (CW, Sept. 17), the maximum memory on a System/38 Model 8 was 8M bytes, or half the limit on an IBM 4341 Group 2.

Incompatible with mainframe software

More importantly, the System/38 is fairly incompatible with all IBM mainframe software. However, the unique systems software characteristics of the machine have convinced many users to accept those limitations as a trade-off for performance and ease of use.

Two years ago, Northeast Wisconsin Technical Institute in Green Bay, Wis., moved from an IBM 370/138 to a System/38, canceling an order for an IBM 4300 series machine in the process.

"We look at it as an even trade," said Dan Van Den Heuvel, the institute's programming section leader. "The System/38 is cheaper, and we can do more work with less bodies now. We would need about one-and-

a-half systems programmers with the 4300. Now I do systems programming myself. Maybe 10% of my time is spent with systems work. Once you get the [System/38] up and running, it pretty much runs by itself."

Not only does the System/38 require fewer programming resources, but its packaged software is cheaper as well. Silver said incompatibility with software written for the IBM 370 architecture was initially a stumbling block when his company moved to the System/38. But he found the savings more than offset the cost.

"We could replace everything we had on the 370 on the System/38 for less than what it cost us to buy the general ledger system on the 370," he said. "You can buy a general ledger for \$6,000 to \$10,000 on the System/38. On the 370, you're talking \$60,000 to \$100,000."

Several unique aspects of the System/38 software are responsible for what users said are major productivity benefits. For one thing, the operating system is designed to eliminate the need for the complex and memory-hungry teleprocessing monitors that are required on IBM's batch-oriented OS and DOS operating systems.

The System/38 also includes a unique user interface called the Control Program Facility (CPF) and its integrated Control Language (CL). CPF offers a consistent interface to all functions. CL is actually a high-level programming language that can be called by RPG-III and Cobol programs.

Because CL can be used to define data description specifications, it eliminates much of the routine and error-prone operations that are usually specified by the programmer.

"In order to get an environment similar to CPF on, say, a 4300, you'd have to put a database on top and also have CICS there," Dequish said. "You'd continually have to add on top to get all those things."

CL extremely powerful

Van Den Heuvel said, "CL is extremely powerful. You can call it from a high-level program; so, for example, if you want to reformat printer files, you just write it in CL. It doesn't handle files very well, and there's no random access. But it was never designed to be an application language." Van Den Heuvel and others further praised the System/38's Source Entry Utility (SEU), which is used to enter and maintain program source statements.

"SEU has a syntax checker that checks each line for you," Van Den Heuvel said. "It eliminates all those [typographical]-type errors you get. Also, with Control Language in SEU, it gives you prompts. All you have to do is type in the command and prompts it, and it'll show you each statement that gives you all the parameters of that command. Basically, all you get is logic errors rather than format errors."

Silver added, "The programming ability with the System/38 is so much easier to compile and make changes."

The System/38 is also the only IBM data processing system to include an embedded relational data base management system (DBMS). The data base is fully integrated with CPF and includes such attributes as shared files with concurrent update, externally defined data and multiple-access paths. Although data is not stored in a relational form, multiple logical views can be constructed for physical files.

"The System/38 forces you into thinking relationally in the way you define files and subfiles," said Roy Francis, vice-president of research and development at RCT Systems, Inc., a North Attleboro, Mass., based software vendor. "It also does away with sorting. Instead, you establish a logical view. The data is still in the same structure, but you are using different views to look at the data."

Van Den Heuvel noted, "It's very

easy to understand how it works. You don't have to go through painful paths to make a file change. It's relatively simple to correct data bases with it."

Because the files are defined externally, coding time is reduced, according to Jack Chenoweth, programming manager at Information Processing Services in Phoenix.

"This way, you don't have to write all the input and output specs," he explained. "You define one file description, and it puts in the I/O parameters for you and lines them up."

Chenoweth further noted that multiple files of the same name can be kept in multiple libraries, allowing for easier backup. "If I need an old file that was backed up a while ago, I can restore it, put it in a different area and point the program at that file," he said.

The subfile feature of the DBMS "will probably save us more time than any other feature," Van Den Heuvel said. "To handle displays where you have to repeat information down the screen in columns, you used to have to put it into tables. With subfiles, it can be done as a system function."

Storage management architecture

Although the System/38 consumes a lot of memory, its single-level storage management architecture allows programs to be virtually any size. To System/38, both main memory and disk storage are treated as a single unit. Programs do not have to be paged entirely into memory.

That characteristic can be helpful in a structured programming environment, according to Chenoweth. "The System/38 pages in code, forcing you into structuring," he said. An additional benefit is that "there's no need to have a separate program can be," he added. "I had one big program run on the System/38 that we couldn't run in less than four programs on the [System/36]."

Finally, the System/38 presents the choice to use RPG-III, Cobol or PL/I programming languages. Although RPG-III has been criticized as being difficult to read and document, it has won fans at many installations.

"I used to think RPG was a dirty word," Silver said. "When we got the System/38, my initial feeling was we'd probably go with Cobol. But RPG-III seems to have captured the best features of RPG-II and Cobol."

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Users warmly greet IBM System/38 enhancements

Recent IBM hardware and software announcements, aimed at bolstering support of the enigmatic System/38 computer, have been a cause for joy among the System/38's extremely loyal user community.

The announcements included two high-end models of the System/38 [CW, Sept. 17] and operating system

enhancements [CW, July 3]. Among the highlights are a doubling of main memory capacity to a maximum of 16M bytes on the System/38 Model 40; performance improvements of up to 70% support for IBM 3270-type terminals; the addition of a version of IBM's Graphic Data Display Manager (GDDM) embedded in the operating system and the ability to attach additional communications lines.

The announcements clearly show that the System/38 is here to stay, users said. Combined with IBM's stated intention to phase out its 4321 and 4331 processors, the activity indicates that the System/38 will become the major alternative to the low end of the successful IBM 4300 line.

The new features extend the power of the System/38 "dramatically," said Roy Francis, vice-president of RAD at ETC Systems, Inc. in North Attleboro, Mass.

Francis noted that in terms of transaction processing, "The [System/38] Model 40 easily overlaps the [IBM] 4361 and even the low-end version of the [IBM] 4381."

Of IBM's adding PL/I support, he said, "PL/I is IBM's language, and it has generally been mainframe-oriented," he explained. "By announcing [PL/I] support, graphics and 3270 support, IBM is telling users the System/38 is going to be around for a while."

IBM has also taken steps to make

the System/38 more viable as a data processing machine. The technical feat of adding 3270 series terminal support and GDDM capabilities, designed for the IBM 370 architecture, required "a whole lot of programming," according to Don Van Den Heuvel, programming section leader at Northeast Wisconsin Technical Institute in Green Bay, Wis.

"If they can take the graphics package and make it run on the System/38, it makes me think they can do that with a lot of other software, too," he said. Van Den Heuvel believes IBM is aiming eventually to cover almost the entire 4300 line and that the company "is interested in growing its System/38 user base."

CDC from page 1

indication that it was considering getting out of the IBM-compatible peripherals business.

In fact, one user maintained, the CDC sales force seemed more shocked by the announcement than the users.

Uncertainty over whether CDC will continue to provide a degree of quality maintenance for its IBM-compatible peripherals and concern over the loss of an alternative to buying products directly from IBM seemed to be the major concerns among users contested last week.

While most said they felt CDC would still provide adequate support for its IBM-compatible drives, Thompson noted that since some of her 3350-compatible drives have been leased from CDC, she wondered how enthusiastically CDC would support those drives if the county office chose to replace them with products from another vendor. She also said that CDC sales staff have indicated that CDC will probably be willing to sell its currently leased drives at very attractive prices.

While he said the CDC announcement did not please him, Dr. James L. Carson, director of the Office of Computing and Information Services at the University of Georgia in Athens, Ga., noted, "we can live with it."

"The peripherals division [at CDC] was one of the most profitable divisions. I surely did come as a surprise," he said, expressing regret that there is now one fewer vendor offering IBM-compatible peripherals.

A DP executive with a Pennsylvania bank explained he purchased CDC disk drives for two reasons. CDC was offering a double-density version of IBM's 3350 (IBM was not), and the CDC units were available sooner than IBM could deliver its single-density model. The only good news about the CDC announcement, the executive continued, is that CDC said it plans to stay in the OEM disk drive marketplace.

In the long run, the decision to drop the IBM-compatible peripherals line may work to CDC's advantage, noted Elaine Litman, president of VIM, the CDC users group. She noted that for some time, CDC has been trying to do business in three marketplaces at once — the mainframe business, the IBM-compatible peripherals business and the supercomputer business. She said that CDC off-loaded the heavy research and development costs associated with supercomputers when it spun off its supercomputer development project into a start-up company, ETA Systems, Inc., about a year ago.

Litman noted that since IBM has been much more competitive in the mainframe peripherals market in the past few years, it has become more difficult for CDC and other plug-compatible manufacturers to compete.

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NEWS



Computer crime bill handed to Senate, waits acceptance

WASHINGTON, D.C. — The fate of the U.S. House of Representatives computer crime bill (H.R. 5616), which had languished for two months since the House passed it in July, was in the hands of the U.S. Senate at press time last week as the 99th Congress worked toward adjournment.

Passage of the computer crime legislation hinged on whether the Senate accepted a package of anticrime bills pushed by House Democrats — which includes the computer crime bill H.R. 5616 — or a different anticrime package pushed by Republi-

cans that does not contain the computer crime bill.

Rep. William J. Hughes (D-N.J.), the computer crime bill's sponsor, deftly placed H.R. 5616 in the Democrats' anticrime package Tuesday, which the House passed on a 496-16 vote. If the Senate rejects this package in favor of the Republican version, then the computer crime bill is likely to die when Congress adjourns for election campaigning, and the legislative process must begin again next year.

H.R. 5616 would make it a federal crime to gain unauthorized access to computers used by the federal government or in interstate or foreign commerce (CW, July 30).

Copyright protection urged to combat software piracy

WASHINGTON, D.C. — The U.S. Copyright Office, in a major study of international copyright issues, said

the U.S. should put copyright protection of computer software high on the agenda of its discussions with multinational copyright organizations and bilateral U.S. trade agreements with Pacific Basin countries.

To combat the international software piracy problem, the U.S. should urge international organizations, whose treaties do not specifically cover software, to begin a study of "whether existing copyright laws and treaties apply to software and whether special amendments might be desirable to balance private and public interests," the report said.

A second strategy, it said, is for U.S. trade negotiators to seek copyright protection in trade agreements with such countries as Singapore and South Korea, which want to attract high-technology investment, but lack copyright protection.

At a recent U.S. Senate hearing on the report, David Ladd, U.S. registrar of copyrights, noted that Singapore is responding to U.S. pressure for a copyright law there.

GAO: More computer use can catch welfare cheaters

WASHINGTON, D.C. — State agencies administering federal welfare programs should make more use of computers to match wage data from external sources, such as employers, with the income data reported by welfare recipients, according to Congress' General Accounting Office (GAO).

In a recent report, GAO said some states are conducting these wage matches manually — a time-consuming and inefficient way to catch welfare cheaters — leaving little time for caseworkers to follow up on discrepancies.

Greater use of computers, which Congress envisioned when it required states to conduct wage matches, would increase the speed and accuracy of identifying the large discrepancies that require further investigation, the GAO report indicated.

Banks attack transaction disclosure proposals, cite DP burdens

WASHINGTON, D.C. — Proposed federal regulations that would require all U.S. banks and their overseas branches to report all foreign transactions have been stalled as a result of fierce opposition from banks that cited the added burden on data processing systems.

The U.S. Department of the Treasury proposed the regulations earlier this year to meet the intent of a recently enacted law designed to crack down on overseas drug traffic.

Attendees of a meeting last week of the Advisory Committee on International Investment, Technology and Development concerning trans-

border data flow issues were told by U.S. Department of State officials and representatives of the American Bankers Association that the Treasury regulation has been put on hold for the time being.

Robert E. Walker, vice-president and associate general counsel of Continental Bank in Chicago, said U.S. banks are facing a growing dilemma meeting the laws and disclosure regulations of the U.S. while at the same time abiding by the financial privacy laws of foreign countries. Congress specifically exempted foreign financial transactions from existing financial privacy laws.

The West German government has adopted a

policy of asserting that the privacy of an individual's financial transactions accompanies the data if it is transferred to the U.S. for processing, Walker said. "This makes it extremely difficult for transborder data flow to occur easily," he added.

While the privacy issues have been raised by banks in their effort to halt the proposed rules, greater concern over the added processing costs to produce the necessary records to meet the requirements is an equal factor, Walker said. "There are enormous operational costs involved here, and we want the Treasury Department to publicize [its] final rule with an opportunity for comment."

FORD from page 1

more about this type of application and applications in the automotive industry in general," Robert explained.

"This relationship has given us a

very strong experience base in distributed processing applications with various types of data in the system," he added.

On Net 1000's processing nodes, Rehert replied, "The customer should not really be concerned by the num-

ber of processing nodes because the 800 [Wats] service basically gives Net 1000 ubiquitous access."

"Ford's decision is a blow to AT&T and comes at a critical time because IBM is in the process of putting its foot down on the accelerator in every

area. AT&T doesn't need any bad news because IBM is on a roll," said Michael Kille, president of Strategic, Inc., which is located in San Jose, Calif.

"The Ford decision may be significant in either altering the scope of the product or ending the product altogether. I would lean toward the latter. I don't think Net 1000 has much of a future," remarked Kim Myhre, manager of communications industry research for International Data Corp., a market research firm in Framingham, Mass. "Net 1000 was a great idea without a lot of foundation. They really didn't have the resources in place or the potential customer base to sell the product," Myhre said.

"Here's a customer who probably decided that it is too expensive," said Kenneth Bosworth, president of International Resource Development, Inc. in Norwalk, Conn.

"The product is somewhat confusing," Myhre said. "If Net 1000 is a time-sharing service, then AT&T was starting off in a game in which there are a lot of players with far more established facilities in terms of program development software and accessible locations than it had."

Myhre said that in the time-sharing market, AT&T has no advantage on the competition aside from owning the necessary facilities, which, he maintained, "is really no leg up in the processing services business."

Wallace is a staff writer for Computerworld On Communications.

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NEWS

Make in-house micro training 'relevant'

By Edward Warner
CW Staff

Ask those responsible for corporate microcomputer hardware and software training what the key ingredient to a successful in-house course is, and the answer is likely to be "relevance."

Relevance, they say, is a major reason why firms teach in-house, rather than use one of the many outside instruction vendors. As Ted Standish, manager of end-user training at the Gillette Co. put it, his students "don't have a lot of time to spend diddling around learning something they can't use."

"The courses" offered externally tend to be too simplistic," he said.

In-house training programs are relevant, said Barbara Evensen, manager of Chemical Bank's Office Technology Center (OTC), because the trainers know their firm's business better than outsiders. "If someone came to us and [asked for] a [Lotus Development Corp.] 1-2-3 class for the real estate division next week, we could do that," she said.

Evensen's OTC has, in fact, tailored its 1-2-3 course to the special needs of groups of students from the bank's real estate, branch banking, energy and minerals investments and treasury departments. The course is one of 18 different half-day seminars being offered by the OTC, established by the bank in 1983.

Another key ingredient is class

size, training managers say. Whether by dint of office geography or instructional philosophy, the average class size in those firms interviewed is about 12 students, sometimes



Barbara Evensen, standing, and Nick Terzaghi, DEC software specialist.

working two to a micro. Such an environment, Evensen said, promotes a sense of "high tech, high touch."

The drawback to small class size is that demand for training can be intense. When Evensen sent out fliers announcing the start-up of her firm's micro training program in March 1983, she sent them to 25 of the bank's known personal computer users. She got back 200 responses.

Since then, Evensen noted, her department has trained 5,000 people, and its courses have moved from cramped quarters in an office cubicle to two carpeted classrooms at the bank's New York headquarters. A third classroom seating 20 students, such as a Personal Computer, has also been opened at another New York location.

A similar situation exists at the New York headquarters of American Express Co., where Carol Gorelick, manager of office systems training, reported that her classroom of six IBM Personal Computers is often backlogged with training requests. Although courses there last 34 hours with one student to a Personal Computer, former students said in a recent survey their biggest complaint was that "they had not gotten to use the Personal Computer as much as they'd hoped to," she noted.

At the New York headquarters of Metropolitan Life Insurance Co., the demand for basic training in microcomputers became so great that last month the course was spun off from the firm's information center to a separate department called Electronic Standards and Training. The information center was getting swamped with training requests from new users and now will just offer software instruction for those with some computer familiarity, said Candice Farnes, a senior consultant.

Even smaller firms doing in-house micro training report problems meeting demand. According to Roy Hill, chief systems programmer for Blue Cross-Blue Shield of Michigan, "we're under what's needed" for training the users of the firm's roughly 180 Personal Computers.

To cope with demand, some firms have contracted with outside vendors. Half the courses taught to end users at the New York headquarters of Merrill Lynch Pierce Fennier and Smith are provided by outside vendors, according to Ronald Marx, project manager for human resources development. Though outside vendors are primarily used to cope with demand, they are sometimes called in when the "in-house staff can't handle the technicality of the course."

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NEWS

MIS credibility hinges on usefulness of product



SW 82
INFO 94

By Charles Hahnke
Ov New York Bureau

NEW YORK — MIS managers need to become better marketers within their own organizations if they want their services to be recognized in the next company budget.

So claimed office communications consultant Alexander J. Rand, who told an audience at last week's Information Management Exposition & Conference (Info '84) that information service departments generate a host of reports for company divisions without being sure of how the reports are used.

Rand, who operates Internal and External Communication in Santa Monica, Calif., said, "The investment in information services is justified on the grounds that managers are going to make better decisions with the information they receive. If they are not using the reports, then the whole justification is shot down."

MIS departments may not be getting feedback

from the recipients of their reports because "up until now you've had to run hard just to get the product out," she said.

That may not be enough when it comes time to compete for scarce corporate resources, Rand cautioned. There are a number of steps MIS managers can take to put their work and themselves in better positions, she said.

Adapt formal procedure

The most basic step is to start using some formal procedure to obtain evaluations on MIS reports from major corporate recipients. With an established procedure, the MIS manager will be armed with the kind of feedback he needs to make MIS reports more effective. When the feedback is good, the MIS manager can put an arrow in his quiver for the day when he must answer a critic.

In Rand's Report Rater program, which she authored for users of IBM's Personal Computer, an MIS manager is asked a series of questions about a particular report — listing the data that goes into it, how many people receive it and whether it uses graphics. The program then connects a standardized questionnaire that is sent to the recipients of the report. It asks such questions as: What percentage of this report do you actually use? Is the

information precise enough? Is it timely?

When a division manager is being allocated a share of MIS expenses based on information he receives, sooner or later he is going to say he is not willing to pay for information that he doesn't use, warned Rand.

The results of the questionnaire can be tabulated into both a summary report and a statistically detailed report. With the feedback, the MIS manager can decide whether to put less information into the report, get the information most in demand into the front of the report or update the information presented.

An MIS staff member can get answers to the questions without investing \$1,995 in the Report Rater program, Rand acknowledged. He can "go into the lunchroom and ask people what they think."

You can only distribute reports on request, then see what is requested. Or send out a memo asking, "Do you like the report and why?" Rand said.

Other things an MIS manager can do to increase the usefulness of his reports include:

- Provide a table of contents.
- Summarize the most important information in a box at the start.
- Move the detail to an appendix.

BUDGET from page 1

were for the organization's new Data General Corp. MV/4000 minicomputer. He said his software budget will rise about 80% next year, largely due to the new purchases.

"We've been increasing budgets for the last two years with the idea that it will start to decrease in coming years," he said. He added that salary increases will probably be minimal in 1985.

A move to packages was also cited by John Hargrave, manager of DP systems at Travelers Insurance Co.'s applications systems development and office automation department in Old Lyme, Conn.

"We're writing less and less home-grown stuff," he said. A personnel freeze has contributed to his company's commitment to packaged software, he added.

The DP manager at a durable goods manufacturer in Pennsylvania, who asked not to be identified, said he expects packaged software expenses to outpace DP budget growth. "If we can buy it, we do," he said.

Packaged software was seen as spearheading budget increases at several installations; personnel costs seem to be holding steady.

Expenses for broad areas like applications support and basic information services have stabilized, the manager said. However, pockets like personal computers, office automation, data base support and telecommunications are growing quickly.

With the exception of a few sites that are planning major upgrades,

hardware budgets look to be stabilizing, according to the managers interviewed. Wayne Boekenkamp, DP manager at Woodward & Dickerson, Inc. in Bryn Mawr, Pa., said he expects his hardware budget to stabil-

ize or decrease next year. "We've pretty much fulfilled our needs here as much as everyone has terminals," he said. With several in-house personal computers, Boekenkamp said, he is now looking for links to the company's IBM System/36 computer. "We would like to be able to download to spreadsheets and use them to update

our general ledger," he said. Hardware budgets are also likely to remain flat at Aspen Systems Corp. in Rockville, Md., according to Michael Tunney, DP manager. "Budget controls are pretty tight," he said. However, the overall budget will be going up 15% to 20%, largely due to increases in the programming staff, he said.

Like several managers, Tunney foresees a continuing explosion in expenditures for microcomputers. "The doors are going to blow off that area," he said. "Fortunately, that's in the users' control center."

Another manager noted that even though his budget will probably decline more than 10% next year, the section related to micros will increase.

"Microprocessor training and development of micro applications will both increase about 15%," said Paul Palouin, director of MIS in the consumer products division of Boston Dickinson & Co. in Rochelle Park, N.J. Budget cutbacks will hit hardest in the areas of packaged software, he said. "We were originally planning to bring in several new packages, but we'll now probably stay with what we have," he said.

The director of administrative DP at Columbia University in New York estimated that micro spending in user departments will rise 300% or more in 1985. But Joseph Krouelick said his department's planned 5% to 10% budget growth will be largely due to a mainframe upgrade and the addition of four or five members to the development staff.

Some installations are planning major upgrades next year. TIL Corp. in East Northport, N.Y., will probably hike its DP budget by 20% to 30% next year, according to Derek Kirby, director of MIS. "We're buying an IBM System/36, personal computers and lots of packaged software," he said.

The DP budget at Thomson & Thomson, Inc. in Boston will rise several hundred percent in 1985, said Charles Lauderman, information systems vice-president. The company is making a commitment to get into image storage and raster scanning as part of its business of searching trademarks, Lauderman said.

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NEWS

Drawbacks deflating interest in network installation



By Paul Karsenowski
CW Staff

NEW YORK — Despite the hype and hoopla concerning local-area networks, few companies have currently installed one, nor do they plan to install one in the future.

That observation was furnished by a randomly chosen sample of attendees at the Information Management Exposition & Conference (Info '84) held here last week.

Conference visitors listed a num-

ber of reasons why their companies did not plan to install a local-area network.

Ned Oliver, manager at Towers Perrin Forster & Crosby in Philadelphia noted, "We currently communicate with our mainframe where we can consolidate personal computer data. That capability satisfies our needs."

Limits in what can be local-area network communications capabilities was another reason some companies shy away from network plans. "We need two-way communication between devices," said Marvin Kleinfelter, information systems project leader at Ahmanson Aluminum Corp. in Lancaster, Pa. "A [local-area net-

work] offers only one-way transfer."

High cost was noted as another network deficiency. "Even large companies find the initial cost hard to bear," noted E. James Melillo of DBA Function Data Processing in Bridgeport, Conn.

Smaller companies can find numerous, cost-effective local-area network alternatives, according to attendees. "It is much cheaper for my company to connect a few dumb terminals to an IBM Personal Computer XT than to buy a [local-area network]," said M. James Cough of Basica, Inc. in Medford, Mass.

Cough added that some companies have installed local-area nets, but do not fully utilize them. "Currently,

networks are not sophisticated enough to meet most companies' requirements," he claimed.

IBM's recent announcement of its PC Network (CW, Aug. 20) did not appear to influence attendees' perceptions of their options concerning local-area network installation.

However, the recent announcement may change one company's local-area network plans. "We were looking at an Ethernet network," Kleinfelter said. "Since we are an IBM shop, we plan to look carefully at the IBM product. But we do not have immediate plans to install a [local-area network]. Our objective calls for at least a two-year wait before installation."

DP market focus of Oct. 18 meet

IRVINE, Calif. — California Gov. George Deukmejian and retired U.S. Navy Adm. Bobby Inman, chief executive officer of the Microelectronics and Computer Technology Corp. in Austin, Texas, are the keynote speakers at the Irvine Computer Science Conference, to be held Oct. 18 at the University of California here.

The morning session will cover the computer industry in the U.S. In the afternoon, university faculty will discuss subjects such as software engineering and artificial intelligence.

Registration for the program, sponsored by the University of California at Irvine Business and Industrial Associates (UCBIA), is \$60, or \$35 for UCBIA members. More information is available from John Peitman at UCBIA, 565 Administration Building, University of California, Irvine, Calif. 92717.

DSS conference slated for Oct. 22

CHICAGO — A conference on software tools for distributed decision support systems (DSS) will be held here Oct. 22 and 23 and in San Francisco Oct. 29 and 30.

The conference will address the management issues, payback opportunities and software tools important for distributed DSS, said a spokesman for Suffolk University of Boston, the conference sponsor. The meeting will examine interfacing micros with mainframes and linking workstations with data sources.

Speakers include Peter Keen of Information Technology Services, Inc.; Michael Treacy of the MIT Center for Information Systems Research; and Gary Gulden and Adam Crescenzo, both of Index Systems, Inc. Each conference will reportedly have vendor demonstrations and user panel discussions.

Each seminar costs \$505, including meals, a reception and a copy of the conference text. Information is available from the Software Tools Conference, Suffolk University, Boston, Mass. 02106.

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Lawyer calls contract key to user-vendor relationship



By John Deane
CW Staff

NEW YORK — What is the extent of a vendor's responsibility in getting a system up and running at a user site?

That was the question debated by a lawyer specializing in computer contracts litigation and the president of a computer services firm at last week's Information Management Exposition & Conference. (Info '84) here.

Robert A. Weber, president of Computer Maintenance Corp. of Secaucus, N.J., speaking from the vendor's point of view, said, "The customer's live operation is really out of our control. Whether you get your data working is not our problem." Rather, the vendor is only obligated to meet the system specifications, Weber said.

Taking a different view was attorney Richard Rayman of the New York firm of Brown, Rayman & Milstein, who said, "The live operation I view as teamwork between the vendor and user. The vendor knows what the user really needs." Rayman recommended that users withhold the final 20% system payment until the system has been up and running for 30 days.

Weber countered "A customer will always dream up more new things for a programmer [to do], particularly if the programmer is left on-site."

Bug vs. enhancement

Rayman said final acceptance of a system is often hung up over disagreements about what is a bug and what is an enhancement. "The vendor views everything as an enhancement and the user views everything as a bug," he said.

The successful contract, Rayman said, is a guide to successful implementation of a system and "not a club held over the vendor's head." Once a user resorts to alleging breach of contract, "the relationship falls apart" between user and vendor, Rayman said.

The chairman of the New York State Bar Association's Computer Law Subcommittee and a former IBM systems engineer, Rayman made several recommendations on what a successful system contract with a vendor should include:

- Users should prepare a structural agreement with a vendor that ties payment to performance, schedules payments on a milestone basis as the system is implemented and includes detailed design specifications. Those specifications should include terminal response time, a factor often overlooked by users, Rayman said.

- "We try to withhold as much payment as possible from the vendor all the way down the line," Rayman said. He recommended that users make an initial down payment of 10% to 20%, pay 20% once the system is tested and accepted off-site, another 20% when the system is tested and accepted on-site, another 20% once the system has been up and running for 30 days and the final 20% when the system has run for 90 days. The

final payment usually represents the vendor's profit, he said.

Weber disagreed, saying vendors should have 80% of their payment once the system is tested and accepted on-site.

"The reason we want to withhold money is so the vendor will maintain an interest," Rayman countered. "You want to retain the vendor's quality personnel in your establishment for as long as possible." Once the user signs off on a system, the vendor will reassign quality staff, he



Weber

told the audience.

Users should seek a contract clause that guarantees them the right to work closely with the vendor to implement a system. "There are vendors who don't," Rayman said, "this," he said, citing the example of a client who set up a desk and telephone in the vendor's office during implementation. "The vendor went crazy," Rayman said.

The contract should include provisions for progress reports twice monthly and for program meetings at

least once a month. With such a clause, vendor management is "forced to find out what his own people are doing and forced to tell the user what's been going on," Rayman said. If the vendor misrepresents the program in the written reports, the user has a string of documented evidence that could be used in litigation, he added.

Users should obtain software source code. "Without the source code, you're extremely vulnerable. You have no option of fixing the software in-house," Rayman said. If the vendor refuses to give up the source code, he said, users should make an arrangement to have the code held in escrow.

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NEWS

Lee Data, Microdata share hardware debut spotlight



NEW YORK — At a show nearly void of major hardware announcements, the spotlight at the Information Management Exposition & Conference (Info '84) here last week was shared by Lee Data Corp., with a workstation and two communications controllers, and Microdata Corp., with two additions to its 9000 business minicomputer series.

Lee Data announced the Series/25 voice/data workstation, said to combine telephone features with IBM 3270 terminal emulation. The Series/25 models 2510 and 2520 feature an internal modem offering 300 bit/sec to 1,200 bit/sec transmission speeds, a 9-in. display and telephone functions such as autodial and teleconferencing, the vendor said.

Asynchronous support

Both models support asynchronous communications. The 2510 reportedly operates as an asynchronous display terminal with a typewriter-style keyboard, and the 2520 can be connected to a Lee Data controller to emulate 3270 displays as well as standard asynchronous communications. The 2520 offers a 3270-style keyboard.

The Models 2510 and 2520 are priced at \$1,295 and \$1,995, respectively. Both are available immediately.

Lee Data also announced two Series 400 system controllers, Models 410 and 420, with enhanced communications abilities. Both models provide 16 asynchronous ports with an IBM 3270 interface and can be upgraded to support 32 ports, Lee Data said. Transmission rates are 0.6K bit/sec, or 7.2K bit/sec in the 3270 mode. Optional speeds up to 56K bit/sec are available.

The Model 410 reportedly emulates the IBM 3274 control unit Models 1C, 21C, 31C and 41C and also allows asynchronous communications through Digital Equipment Corp. VT52, VT100, VT132 and Hewlett-Packard Co. 2624 point-to-point emulations.

The Model 420 allows access to IBM or IBM-compatible hosts. When operating through IBM's Systems Network Architecture, the 420 emulates IBM control unit Models 1A, 21A, 31A and 41A, the vendor said. The 420's asynchronous ports allow communications in DEC VT52, VT100, VT132 and HP 2624 display emulation modes.

The Model 410 is priced at \$14,820 and the 420 at

\$19,520. The controllers are available immediately.

Lee Data also announced a twisted-pair adapter called Quicklink, said to permit data transmission between any Lee Data display and controller using telephone wiring at distances up to 1,000 ft. It can be used with the vendor's Coax Eliminator Models T1 and T8 for longer

distances. Quicklink is priced at \$95 per connector pair.

Lee Data is located at 7076 Flying Cloud Drive, Minneapolis, Minn. 55344.

Microdata announced the 9208 business minicomputer, said to offer twice the processing speed and disk capacity and 50% more main memory than the 9000. The 9208 runs Microdata's Reality op-

erating system and offers up to 6M bytes of main memory and up to 3G bytes of disk storage. It reportedly can support up to 200 terminals simultaneously and allows asynchronous communications using IBM 3270, 2790 and 3780 protocols.

Because much of the operating system is in microcode, which moves certain soft-

ware functions into hardware, Microdata said, system overhead has been reduced.

The 9208, with 2M bytes of main memory, 512M bytes of disk storage, 16 ports, a 300 line/min printer and two terminals, is priced at \$180,000.

Microdata is located at 17481 Red Hill Ave., Irvine, Calif. 92714.

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NEWS

From supplies to upgrades, DP managers want control



By Paul Gilks
CW Staff

NEW YORK — Data processing managers would like to have more control of everything from typewriter

ribbons to mainframe upgrades, according to interviews conducted at the Information Management Exposition & Conference (Info '84) held here last week.

In response to a question about what segment of the DP operation they would most like to control better, managers provided a bouquet

of different responses.

Paul Polonsky, director of MIS in the consumer products division of Becton Dickinson & Co. in Rochelle Park, N.J., cited a basic need. "Staffing costs are a problem now," he said. "The corporation is cutting back in general. Justifying the human resource costs of MIS vs. the overall needs of the corpora-

tion [is an issue]."

Another DP manager, who asked to remain anonymous, said, "Administratively, involving in a multivendor environment is just terrible. I feel like I've lost control of it."

Another manager echoed the desire to streamline the hardware procurement process. "It would be nice just to

spend \$100,000 on a new machine and then to get approval," said Derek Kirkbride, director of MIS at TTI Corp. in East Northport, N.Y. "But that's just not the real world."

Paper costs

Wayne Boelenkamp, DP manager at Woodward & Lothrop, Inc. in Bryn Mawr, Pa., cited "paper, typewriter ribbons and daisy-wheel" as cost areas in which he would most like to reign. "If you want to back up an IBM System/38, it takes 300 to 400 daisy-wheels at \$5 a throw," he said.

Several managers said they would like to get a better handle on personnel costs. Joseph Krowcick, director of administrative DP at Columbia University in

*"It would be
speed just to
spend \$100,000
on a new machine
without
having to get
approval."*

— Derek Kirkbride, director of MIS at TTI Corp.

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New York, said, "The area I'm working on is trying to get more productivity out of people. In fact, we just put up a homegrown time reporting system to try to monitor costs on projects."

Productivity is also a concern at Thompson & Thompson, Inc. in Boston, according to Charles Lauderhose, vice-president of information systems. "We'd like to get our people costs more under control," he said. "We're hoping to do that when a fourth-generation language has been brought in by forcing out more work to the users."

Use of micro

Not surprisingly, two managers said they would like to have more say in the use of personal computers. "I have some problems with micro," said Alan McLean, director of MIS at Catholic Charities in Brooklyn, N.Y. "Eventually, we're going to have to share information, and ideally, I'd like to have a terminal on every desk. My fear is that the users are going to get so into using their [personal computers] that they're never going to want to give them up."

Another manager, who asked to remain anonymous, added, "There's a certain amount of faddishness to personal computers that we're trying to combat. We're trying to work more with micro and mainframes together right now."

PRODUCT
SPOTLIGHT

Value-added network carriers provide companies

By John Bitts
CW Staff

The public data network industry is small; according to one source, combined industry revenues total only about \$30 million more than the Federal Aviation Administration's \$300 million annual communications budget. But these data communications services form the core of many large corporate data networks and are used by many others to supplement private-line networks.

Value-added network carriers, as they are often called, include companies like GTE Telenet Communications Corp., Tymnet, Inc. and Uninet, Inc., the three largest providers in the business, respectively.

Other than GTE Telenet, which began serving customers as Telenet Communications Corp. in 1975, most of today's networks were originally built to support clients of time-sharing companies. Uninet, ADP Autonet, Inc. and CompuServe Network Services, Inc. were created following the precedent set by Tymshare, Inc., which separated its network services from its processing services in 1976 when it spun off Tymnet.

Value-added network services have traditionally been for low-speed asynchronous traffic, usually a terminal accessing a remote host data base at 300 to 1,200 bit/sec. The services have evolved slowly, and today some of the carriers offer syn-

chronous support, while many offer 2,400 bit/sec dial-up terminal access in certain cities.

Applications for value-added networks have also evolved, according to Mark Winther, a senior analyst with Link Resources, Inc., a research firm in New York. In his report "Competition in Value-Added Networks," he wrote: "In the early 1980s, 50% of [value-added network] business involved time-sharing and data base access, while the balance came from providing corporations with superior links between their hosts and terminals. In 1984, the reverse is true, and by 1988, 75% of value-added network services will be intracorporate communications."

The attraction of these services stems from the "value added" to the wire, hence the name value-added network. Unlike a naked private or switched line, to which the user has to add his own error detection equipment and management controls, value-added networks are true services, providing network management that ensures high reliability and availability. Additionally, these networks offer protocol conversion, speed matching and exacting error correction techniques, which provide for very low bit error rates.

The real beauty of value-added networks, however, is that the extra value comes cheap (see story page 17). Value-added network rates are insensitive to distance and are far lower than rates for

private lines. Wats and direct-distance dialing. Clint DeGabriele, vice-president of marketing and field operations for Tymnet, said that in certain applications, he can beat private-line rates by 40% to 50%. Winther said that value-added network users pay only about \$6/hour, whereas Wats users typically pay \$20 to \$25/hour and direct-distance dialers \$25 to \$30/hour.

Another cost-saving advantage of value-added networks is the protocol conversion that many offer.

If the user wants to maintain a synchronous connection with his host, the options are fewer and harder to cost-justify. In general, however, the traffic mix on value-added networks is changing. "Originally, 80% of Tymnet's traffic was asynchronous terminals talking to time-sharing hosts," DeGabriele noted. "Today, 30% of our traffic is some form of synchronous traffic." DeGabriele also estimated that 60% of Tymnet traffic is at speeds greater than 1,200 bit/sec.

At least one carrier, RCA Cylix Communications Corp., carries nothing but synchronous traffic. That service is unlike other value-added networks in that it is satellite-based and, because of its target traffic, typically chases a different breed of user.

Traditional carriers like GTE Telenet carry less synchronous traffic than does Tymnet — 5% to

NEWS

with reliable telecom services at decreased costs

10% less, according to Floyd Trogdon, vice-president and general manager of Teletel — while still others carriers do not support it at all. "Generally, we find that if a company has a [Systems Network Architecture] or [Binary Synchronous Communications] application, it can generally justify a leased line," said Clark Woodford, vice-president of telecommunications services for CompuServe Network Services.

In fact, the widespread use of private lines in Fortune 500 corporations typically relegates value-added network use to a supplementary role. Many companies, however, use nothing but value-added networks for their corporate data network needs, and others maintain private-line networks and use value-added networks for certain applications (see story page 16).

On the average though, large companies usually

rely on value-added networks "to complement in-house private-line networks for low-volume locations or for connections to customers or other enterprises where they could not afford to terminate a leased line," according to Dixon Doll, president of the DMW Group, a research and consulting company in Ann Arbor, Mich.

Others concur. "If you were a [General Motors Corp.], you could probably justify private lines to the major cities, but it's the little towns that would be better off dialing in," said George DeSalvo, director of a service for communications users for the Washington, D.C., office of International Data Corp. (IDC), a market research firm.

The de facto industry standard interface used to connect computers and other intelligent devices to value-added networks is X.25, which is recommended by the International Telephone and Tele-

graph Consultative Committee. Although carriers support multiple interfaces, many computer manufacturers are making hardware that is X.25-compatible.

Controls such as the X.25-defined protocol enable value-added networks to operate with low error rates. That control, however, cannot be extended out to dial-up users, a problem that is compounded by the growing use of personal computers to access value-added networks.

To address this problem, some carriers have endorsed the use of the Microcom Network Protocol (MNP). GTE Telenet endorses MNP, according to Trogon, because it provides error correction in the local loop, which is needed to provide end-to-end error correction.

Provision of such protocols and capabilities, via

See MET page 18

A SAMPLING OF VALUE-ADDED NETWORKS

	Asynchronous Transmitter Characteristics				Synchronous terminal's output	Host Interface		Estimated net system loss	Traffic charges	Potential maintenance	No. of users actually communicating simultaneously
	Mod-Is	Main antenna	Private ports	Licensed ports		Asynchronous	Synchronous				
STS Network Communications Corp. 8229 Wilshire Blvd. Venice, Va. 22180	110-1,300 Hz./sec. \$1.0-\$1.131/yr. Per-min. charge also available.	\$26.11/hr.	\$500 installation; \$200-4750/mo., depending on location and type of facilities used.	Same as dedicated host access fee.	Can use synchronous host interface, for multiple terminal controller support.	\$100 installation; \$250-\$600/mo., depending on ports.	Asynchronous, 3270 BSC, BOLC, 1.25 MB/sec., 2780/2780. \$400 minimum; \$800-\$1,100/mo., depending on number and type of ports.	\$1,000-\$3,000 installation, depending on system; \$200- \$1,400/mo., depending on number and protocol.	On-on fee covers first 1,500 packets, \$1.70 per packet, 1,000 through annual operation.	Asynchronous and synchronous to LSS, asynchronous to terminal controller through serial operation.	360
Tymnet, Inc. 2710 Orchard Plaza San Jose, Calif. 95134	110-2,400 Hz./sec. \$2.611-26.11 depending on location and size of job.	Same as dial-in, plus \$18.75/hr. surcharge.	\$500 installation; \$250-\$450/mo., depending on location.	\$500 installation; \$200-\$375/mo., depending on location; plus \$150 if router is required by company.	BOLC, 3270 BOLC, 3270 BSC, BOLC, 1.25 MB/sec. \$750 installation; \$300/mo. terminal support.	\$300-\$2,000 depending on equipment and no. of ports; \$200- \$750 for network costs.	Same as terminal costs, BSC, 1.25 MB/sec., 1.25 MB/sec. \$750 installation; \$200- \$600/month; \$300-\$700/mo.	\$250 installation; \$100-\$1,500/mo., depending on speed.	\$2.1-\$5.00 per 1,000 packets depending on time of day.	Asynchronous to 3270 BSC, BOLC, 1.5 MB/sec.	500

*Based on the combination of serving sizes, use this chart for rough estimation only.

NEWS

IBM, AT&T perceived as dark horses in network race

By John Ditz
CWI Staff

Opinions regarding AT&T Information Systems' Net 1000 and IBM's Information Network vary widely. Some would simply classify both services as value-added networks, while others say AT&T's service is a network to interconnect networks, while IBM's net looks like a remote problem-solving service.

The companies themselves are hesitant to pigeonhole their services into any one category. But George De-

Salvo, director of Communications Technology Service for International Data Corp., a Framingham, Mass., research company, said flatly, "IBM's Information Network and AT&T's Net 1000 are value-added networks."

DeSalvo clarifies this by adding, "The networks are not the same as GTE Telenet Communications Corp., Telenet, [Tymnet, Inc.] Tymnet or [Uninet, Inc.] Uninet. They either add more value or aim at

a different segment of the traffic."

"AT&T and IBM would have you believe [their networks] are different," agreed Mark Winther, a senior analyst with Link Resources, Inc., a New York research firm. But, he added, "They are [value-added networks] just like everybody else's." Winther also said both companies "have a lot of problems to work out technically ... and neither has had a lot of success so far."

If the networks are the same, how do they stack up? "AT&T has managed to fool around in this area for so long that a lot of [current] don't regard them as a serious [competitive] threat — at least for the short term — and I think that might be a valid observation," noted Dixon Doll, president of the DMW Group, a research and consulting firm in Ann Arbor, Mich.

Customer access main thrust

"IBM has been dabbling in the [value-added network] business through the Information Network for quite a long time too," Doll explained. "However, its main thrust is to provide access to IBM application software and to provide customers with access to the new office systems, decision support systems and graphics packages."

Doll would not, in fact, put IBM in the same primary market with traditional value-added networks. He does believe, however, that the company will someday enter the market in a much more direct manner.

Another distinguishing feature of IBM's Information Network, according to DeSalvo, is that it is primarily a synchronous network that is more suited to handling high-speed CPU-to-CPU traffic.

He went on to say that AT&T's Net 1000 falls somewhere between the Information Network and value-added networks typified by GTE Telenet Communications Corp.

Throwing some light on the confusion, Allen Rebert, AT&T's director of network applications for Net 1000, said, "Most Fortune 500 companies already have various types of private networks, and probably many of them are already using a number of [value-added networks]. Net 1000 is aimed at interconnecting these networks, particularly for industries that have large interorganizational or intercorporate communications needs."

For example, Rebert said AT&T is looking at automating buyer and seller problems

for many industries. Once these intercorporate hub applications are developed, other users can be added to the network as spokes are connected to the hub of a wheel, he said, forming a large industry-specific network. This would enable a person using a personal computer to log a purchase order with a firm that maintains a sophisticated order-entry system.

'Network of networks'

"AT&T's Net 1000 is going to be a network of networks, where it will offer specific

solutions for industry segments such as the financial industry or credit card companies, but it won't be trying to provide one base service for everyone," clarified Audrey Mandala, a senior analyst with the Yankee Group, a Boston research and consulting firm.

Targeting vertical industry segments is a strategy many value-added network-makers will pursue, she said. This will make it harder in the future to distinguish the services of IBM and AT&T from the rest of the pack.



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CW43

NEWS

Software AG's DBMS for VAX grabs show spotlight



NEW YORK — A micro-computer-mainframe link that is said to offer distributed data base capabilities and a version of a major data base management system (DBMS) for Digital Equipment Corp.'s VAX-11 users topped the software product announcements at last week's Information Management Exposition & Conference (Info '84).

Software AG of North America, Inc. expanded its base outside the IBM realm by announcing versions of its Adabas DBMS and Natural programming language for the DEC VAX-11 environment under DEC's VMS operating system.

Adabas(VMS) and Natural(VMS) are said to be functionally identical to the IBM versions of the products. Users can migrate applications from either of the two machines to the other with minimal recoding, the company said.

Adabas(VMS) is a transaction-oriented, high-volume DBMS that reportedly features automatic restart and recovery, the ability to restore data after a media failure, transaction processing and deadlock prevention.

Natural(VMS) is a high-level, nonprocedural application development language designed for nontechnical end users. It uses the characteristics of DEC VT100 and VT200 terminals. Its editor is a superset of the DEC EDT full screen editor.

Adabas(VMS) will be available next month, and Natural(VMS) will be available in the first quarter of 1985. The products are being sold as a package for \$60,000.

Software AG also introduced a tool that allows IBM Vasm users to migrate to

Adabas without program conversion.

Each time a Vasm application performs a call, Adabas/Vasm Bridge converts it to an Adabas call transparent to the application.

The bridge is available for IBM OS and DOS installations for \$10,000 for a perpetual lease or for \$4,000 for a yearly lease. Software AG is lo-

cated at 11800 Sunrise Valley Drive, Reston, Va. 22091.

Tesseract Corp. unveiled a microcomputer-mainframe link that is said to allow data bases to be distributed to local personal computers.

Called Merlin, the product reportedly allows applications to be designed that combine mainframe and micro processing.

A built-in Link Command Language allows applications to be built and run simultaneously with the communications link.

Merlin runs on the IBM Personal Computer, Personal Computer XT and Personal Computer AT with a minimum of 256K bytes of memory. The product costs \$1,000 per micro.

The mainframe system runs under IBM's OS and DOS and includes an interface to IBM's IMS, Collinet Software, Inc.'s IDMS and Software AG's Adabas.

It sells for \$30,000 to users of Tesseract application software. Tesseract is located on the Fifth Floor, 101 Howard St., San Francisco, Calif. 94105.

See how INFO will make your company more efficient and your life a lot easier.

NET from page 17

ers and analysts agreed, should be considered carefully when evaluating value-added network services. Other criteria that users should examine is area of coverage and types of protocol support offered.

Speculating about the future use of value-added networks, DeSalvo of IDC said that their fate will hinge on where basic telecommunications rates go and how regulations evolve as far as access charges. "If [Washington is] going to tax private lines to death, it might be a lot cheaper to go with [value-added networks]."

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NEWS

Creative modeling sells data base to management



CW AT
8/10/84

NEW YORK — The best way to design your company's data base is to look at how your company does business. Often the data base design will fall naturally out

of that model. You can then take certain tried and true steps to ensure that the transformation to data base technology goes smoothly.

Methods for accomplishing both objectives were outlined here last week by speakers at the Information Management Exposition & Conference (Info '84). At a session on "Strategic Plan-

ning in Data Base Technology," Samuel Whidden, head of information systems development at the American Mathematical Society (AMS) in Providence, R.I., described how his organization had recently used a business model to serve as a foundation for a data base model.

AMS, which is a professional society that also pub-

lishes journals and abstracts, suffered from an applications library that had been developed over a period of almost 20 years. There was little integration, and some of the programs "were patched until it became almost impossible to add more patches," he said. The visible applications backlog at AMS had grown to more than 60 pro-

grammer-years.

AMS management looked at the services the society provided, including publishing, typesetting, subscriber services and meeting management. They found that the various functions shared much of the same data. "We found we could service all functions as if they were on an assembly line," he said.

For example, manuscripts were received, edited, typeset, proofread, returned for final review and ultimately linked together into a journal.

The society found that much of the data that was entered in the process could draw upon or be used by the subscription department and in inventory control or could be employed to create abstracts and indexes.

'Worth a thousand lines'

From a model that previously had shown only marginal overlap between the various functions, AMS developed a model in which the data base served as a common point for all AMS operations. The model translated very naturally into a data base picture. "It was a picture worth a thousand lines of code," he quipped. The project "aided our efforts to sell a major data base project to top management," Whidden said.

Arlene Klein, vice-president of DP systems at Blue Cross/Blue Shield of greater New York advised a similar approach, but noted that user departments must be fully involved with the process of installing a data base management system (DBMS). "Data base planning requires a commitment at all levels," she said.

That commitment is not difficult to obtain if the DP department can demonstrate tangible results, she said. For that reason, it is best to choose small and visible projects that satisfy an immediate need for data base integration.

Get user departments involved in small group planning activities along with representatives from the applications, data base and operations segments of DP, she said.

Milestones should be defined with the users in mind and should be set at reasonable intervals so that users believe progress is being made, she said. Most importantly, the data base should be designed with a long-term view toward expansion and changing requirements. For example, if you are planning to add application generators in the future, you should be aware of the performance problems they cause and should choose your DBMS with performance in mind, Klein noted.



NEWS

NCR chief says costs to drop as technology improves



By John Deason
OW Staff

NEW YORK — Price/performance improvements will continue to lower the cost per instruction executed and the cost of data storage for years to come, the president of NCR Corp. predicted in a keynote address last week at the Information Management Exposition & Conference (Info '84) here.

Charles E. Esley Jr. of NCR said advances in semiconductor technology, especially metal oxide semiconductors (MOS), along with the continued application of industry know-how will yield further gains. "There has been no flattening of cost/performance gains visible as far into the future as we can see," Esley said. "In fact, cost/performance gains are accelerating."

As evidence, he said, the gate speed of MOS microprocessors averaged 100 nsec in 1970, vs. 3 nsec in 1980. The higher speeds have permitted increased complexity. In fewer than 15 years, the industry has moved from 4- to 8- to 16- to 32-bit microprocessors while improving gate speeds, said Esley, who has 30 years of industry experience, with 22 of those years at Burroughs Corp.

Reversed relationship

Technology advances have changed the economy of large mainframes and small systems using microprocessors, Esley said. Whereas an old rule of thumb was that "For twice the price one could buy four times the performance," microprocessor technology has reversed the relationship, he said.

Using millions of instructions per second (Mips) rates as a measure, Esley said the cost per mainframe Mips today ranges from \$600,000 to \$1 million, while the cost of supermini Mips ranges from \$150,000 to \$350,000. Further, the cost of 23-bit supermini Mips ranges from \$60,000 to \$100,000, and the cost of personal computer Mips ranges from \$25,000 to \$40,000, Esley said.

Cost/performance advances also result from industry-standard devices such as the Small Computer Systems Interface, which is now available in a single chip. At a cost of less than \$25, this chip replaces an 11- by 14-in. board that costs \$250, Esley said. Such devices have a double-barreled effect on cost — they lower manufacturing cost by reducing component count and lower development costs by simplifying system design, he added.

Cost advantage narrowed

Esley predicted that the cost advantage per Mips of small micros over large mainframe will be narrowed by the use of MOS technology in mainframe logic. But he also said, "The present substantial cost advantage of the smaller systems will persist for some time to come."

Addressing the implications of the reversed price-performance curve for MIS managers, Esley said MIS will become less centralized within organizations. It will not be an easy

transition to make.

When microcomputers began to be used for dedicated applications, MIS management was in many cases determined to retain control, especially of costs for new equipment. "In extreme cases, the central MIS department was transformed into something approaching a department of computer-use prevention," Esley said. But the rise of

low-cost personal computers has challenged MIS to maintain control while satisfying end users, he said.

For example, five years ago the cost of mainframe computing power was approximately \$80 per hour, Esley said; today, the cost of micro computing power is about 60 cents per hour. "That means it doesn't take much improvement in productivity

Esley

requirements of users will differ widely." For these reasons, Esley said, he does not believe any single type of local-area net will become a universal solution. The cost of a local-area network will vary with performance, and performance involves more than transmission capacities, Esley suggested. A local-area network wired into the walls of a building that pro-

vides hundreds of connections also has hundreds of potential failure points, he said. But users will expect extremely high reliability, an architecture which minimizes the possibility of the entire network being down at once and tools for isolating faults when they occur. "It is not clear to me that any local-area network now available meets these requirements," he said, adding that a number of small local-area nets do fit the bill.

Standard operating systems will also contribute to computing price/performance gains, Esley said. But application code must be written to that operating system and not to a specific hardware set, he said. No operating system for 16-bit machines has yet emerged that plays the same role as Digital Research, Inc.'s CP/M in the 8-bit world, he said. As a result, for performance reasons, programmers frequently write machine-dependent code for 16-bit micros, Esley said.

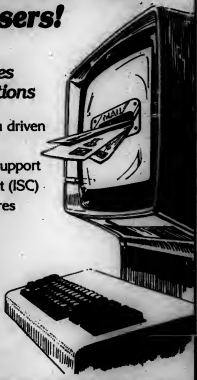
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For comprehensive micro-level Decision Support we offer **SeriesOnePlus™**. **SeriesOnePlus** includes file management, spreadsheet, graphics, reporting and word processing components that are all integrated through a unique "BUS" architecture. Because the system is designed exclusively for business situations, **SeriesOnePlus** complements any mainframe-micro network strategy.

#8 Mainframe Decision Support Software

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NEWS

Executives resist micro, DSS combination: manager

Voice/data machines more warmly accepted than microcomputers in corporate culture



By Paul Karczenowski
CW Staff

NEW YORK—By placing microcomputers with decision support system (DSS) software on executives' desks, one will win more enemies than friends.

Jack Kelly, manager of management support sys-

tems at Xerox Corp.'s Computers Services in Los Angeles, made that claim at the Information Management Exposition & Conference (Info '84) held here last week.

Kelly, who is responsible for implementing DSS products at Xerox, attempted to introduce executives to DSS capabilities in 1981. The manager met with a great deal of resistance.

One major stumbling block was that corporate culture had not embraced microcom-

puters, Kelly said. Consequently, executives thought it was beneath them to work with the new equipment. When senior managers did test the machines, they were unable to operate them. And finally, most executives lacked typing skills necessary to enter data.

Resistance was so great that rather than force personal computers on skeptical managers, the company brought in products that combined voice and data processing. "Executives could operate a telephone, so they were not as frightened by these machines," Kelly noted.

Acceptance replaced downgrading as the voice/data machines became status symbols. "I really have no good reason why that happened," Kelly said.

Kelly said he hopes the managers can be weaned toward microcomputers. "Voice/data machines are moving in both directions," he said. "There are now a number of products available that combine complete personal computer capabilities into a telephone device." As these products appear, he said, executives will be more willing to use microcomputer DSS.

While executives shunned personal computers, accountants embraced them. "The benefits were so obvious," Kelly claimed. "As soon as an accountant saw a spreadsheet, he threw out all his green-lined paper."

But even accountants experienced problems. Kelly listed four of them:

■ It was difficult to keep track of different departments' data.

■ There were problems with extracting proper corporate data from a mainframe.

■ Consolidating various DSS models was tedious.

■ Individual models were poorly documented.

To solve the problem of tracking department data, his department built tables that linked data for the user. Extracting corporate data be-

came easier when Kelly's department wrote predefined query sequences. A personal computer version of the company's mainframe DSS was developed so that data could be consolidated on the mainframe rather than on a microcomputer. "The microcomputer was just not powerful enough to handle some models," Kelly said. With the personal computer package came a consistent method of documenting DSS models.



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Oct. 29 meet to focus on micro issues

SAN FRANCISCO — A two-day conference called "Trends & Opportunities: The Next Five Years" will be held at the Fairmont Hotel here Oct. 29-30. The seminar, planned by Creative Strategies International, Inc. (CSI), will address issues on telecommunications and micro.

Day one's Telecommunications program will note changing technologies and new applications. The Oct. 30 Microcomputer talks will stress issues affecting industry participants' success.

The forum costs \$446 for one day; \$796 for two. There is a 5% discount for three or more from the same firm. CSI is at 4340 Stevens Creek Blvd., San Jose, Calif. 95129.

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CMAA

Position seen key to information technology benefits



By John Desmond
CW Staff

NEW YORK—Spending for information technology will not result in management productivity gains for all companies—more for those companies in good strategic positions before they decide to spend, according to the results of a study of 40 U.S. and European companies conducted by the Strategic Planning Institute of Cambridge, Mass.

The productivity study, based on 100 factors tracked from 1978 to 1983, concluded, "No evidence indicates that information technology applications by themselves spur the creation of business opportunities." The study's results were revealed by its director, M.C. Augustus van Nievelt, at the Information Management Exposition & Conference (Info '84) here last week.

Other key findings were:

- Information technology spending had a negative effect on management productivity in companies in nonstrategic positions. (A strategic position was developed by examining 30 factors, including market share and product quality.) "They were automating bad decisions. The more they spent, the worse it got," van Nievelt said.

- The study found no evidence that putting a microcomputer on every desk increased management productivity. "Just buying a computer is not the solution, contrary to what many advertisements would have us believe," van Nievelt noted.

- Spending for information technology continued to rise when the companies studied laid off 30% of their work force during the recession years from 1978 to 1982. Also, the number of managers rose in relation to support personnel—a development made possible by the advent of tools such as computer-aided design.

- Information technology spending took a growing share of management budgets in the companies studied, despite the work force reduction.

The companies studied ranged in size from small firms to Fortune 500 companies, said van Nievelt, who directs the institute's Management Productivity and Information Technology (MPIT) program. The study analyzed the cost of management with an emphasis on information technology expenses.

Firms data base need

The institute chose the companies studied from the Profit Impact of Market Strategy (PIMS) database, van Nievelt explained. PIMS provides for the planning activities of member companies, each of which contributes coded business information to the base.

For the MPIT study, van Nievelt defined management productivity as the value a manager adds to the organization, minus the manager's cost. Information technology included computers, data bases and software, word processing, communications devices, electronic reproduction devices and consulting services.

"Information technology, should

'No evidence indicates that information technology applications by themselves spur the creation of business opportunities.'

— from the Strategic Planning Institute productivity study

improve management performance through increased value or lowered costs," he said, noting that such is not always the case. In some firms, he added, managers are provided with personal computers, but no link to a data base, rendering the micro little more than a glorified calculator.

The key for many companies in making effective use of information

technology is to incorporate the embedded experience of company personnel. "When a system is able to capture the expertise of a few in the organization and is able to broadcast the expertise to wider parts of the organization, the organization has leveraged the expertise," van Nievelt noted.

Such automation is resulting in or-

ganizational change, van Nievelt suggested. "We'll see organizations that are less complex and individuals within the organization who will have more control, with more to decide at their levels," he said.

The shift of power within the organization strips away redundant management layers and moves executives closer to operations and customers, van Nievelt said. As an example of the effect, he cited a European company that devised a computer program to provide auto body shops with paint colors based on factors such as a car's age and where it had been driven. By providing customers with a unique service, the firm effectively eliminated its competition.

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NEWS

Apple priming Macintosh to crack corporate mart

By Edmund Wimmer
CIT Staff

CAMBRIDGE, Mass. — Admitting that his firm's Macintosh computer has been "a hard sell in corporate America," Apple Computer, Inc. Chief Executive Officer John Sculley told a packed lecture hall here recently that his firm plans to introduce "a series of building blocks" over the next 18 months to help the Macintosh crack the corporate market.

In a later interview, Sculley refused to elaborate on his statement, except to cite the firm's already announced plans to produce a laser printer and develop a networking configuration that would link the computers and peripherals via their serial ports.

Sculley's otherwise upbeat presentation to roughly

from one student, Sculley said Apple would continue to "market very aggressively the Apple II at least until the end of the decade." He also said no new software would be produced for the Lisa micro, though a company spokesman later said some new Macintosh software will run on the Lisa.

Apple's management style

was also highlighted during Sculley's talk. Though he called IBM the "best managed traditional corporation in the world," he later said "there are no role models there for us." The average age of an Apple employee is 29 — the marketing manager for the Macintosh is 28 — and a section of the company's factory has arcade

games and a high-technology stereo sound system for worker recreation, he noted.

Sculley said he refuses to read anything longer than one typewritten page in order to promote brevity and clear writing among his subordinates.

Macintosh computers are now rolling off the company's highly automated Sil-

icon Valley assembly line at the rate of one every 27 seconds, Sculley said, but it was only last year that the company's stock plummeted from \$75 to \$16 a share in the face of sluggish sales of the Lisa micro. Said Sculley: "Nothing helps you get your priorities in shape better than a life and death struggle."

... in big-brand marketing nobody remembers number three.

— John Sculley, chief executive officer, Apple Computer, Inc.

200 students at MIT's Sloan School of Management looked at the screen by which Apple and IBM compete in a game he called "big-brand marketing." Apple wants to make microcomputer marketing "a two-horse race" because "in big-brand marketing nobody remembers number three," said Sculley, who also serves as the company's president.

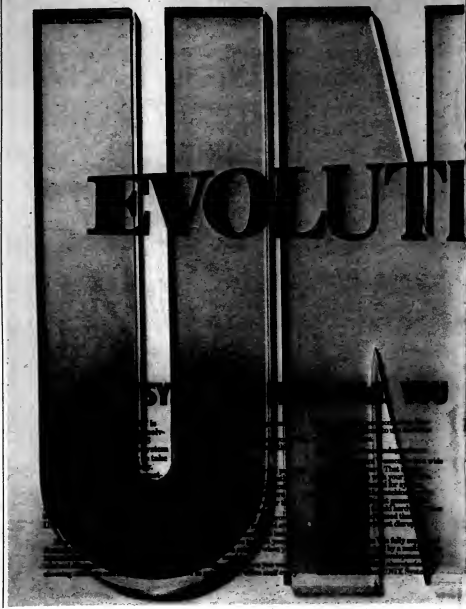
For that reason, and to promote sales, Apple will spend \$100 million on advertising in the U.S. this year alone.

'Not going to conform'

Sculley vowed, though, that Apple was "not going to conform to IBM standards" in terms of machine compatibility, but would tie into IBM's network standards "as soon as those standards are announced." He added, too, that Apple "will obviously have to have some gateway products into the IBM world," adding that these will likely come from "strategic alliances with other companies."

The former PepsiCo, Inc. marketing executive, brought on board by Apple in early 1983, said Apple expects to "earn their way in" the corporate offices, where he claimed there "currently exists a pro-IBM bias among information managers." Most information managers came out of IBM or were trained by IBM, he said.

In response to a question



NEWS

Reporters go on-line to track politicians' votes, funding

By James Connolly
OW Staff

Politicians throughout the South are finding that newspapers can track and cross-match their voting records with their political contributions, a practice that may show whether contributors get what they pay for.

Three newspapers in Florida began using computers to

monitor campaign contributions two years ago. Since that time, newspapers in Virginia and North Carolina have launched their own projects to discover where politicians get their money and whether those polls support their contributors' pet legislation.

"As a former political writer, bureau chief and now

editorial writer, I know how invaluable this type of information is. Who does a candidate owe his loyalty to—the voter or his contributors? The computer can help us find out," said Martin Dyckman, chief editorial writer for the St. Petersburg Times and chairman of the Florida Joint Monitoring Venture.

The three Florida papers,

the St. Petersburg Times, the Miami Herald and the Orlando Sentinel, joined forces two years ago after each had tried manual contribution monitoring efforts.

A staff of up to eight people working in the press building near the state capital in Tallahassee takes candidates' fund-raising reports and keys in that data

through Texas Instruments, Inc. Silent 700 terminal/printers linked by acoustic couplers to Florida State University's Control Data Corp. Cyber 260 mainframe. The project, known as the Campaign Contributions Research Project and alternately as the Greening Project and Macraiser, leaves space on the mainframe system.

Ann Driscoll, the project director, reported that on-line inquiries such as the total amount that a candidate received are answered within 30 seconds by the system, which uses Intel Corp.'s REX Manager data base management software. She said longer reports—such as listing all contributors to a candidate, contributions from outside the candidate's home district or contributions from special interest groups—can be printed on high-speed printers at the university.

Monitoring legislative races

Two years ago, the project monitored the gubernatorial, cabinet and legislative races. This year, with no statewide election, it is watching 141 legislative races.

Dyckman reported that in some instances the special interest groups who contributed the most money to candidates in 1982 had the best success when legislation was voted on in 1983.

According to Driscoll, the papers split the \$85,000 to \$90,000 cost of running standardized hard-copy reports, which list candidates, their contributors, details such as the contributors' addresses and occupations and the contributions of political action committees. The papers can also use their own Telecam Communications Corp. terminals to make more specific inquiries about special interest groups or individuals. These inquiries are kept confidential because the three papers compete for a statewide readership, she noted.

In Virginia, Richmond Times reporters Ray McAllister and Mike Griman are preparing a series of stories about corporate and political action committee contributions in recent elections and how incumbents voted on bills of interest to those contributors.

McAllister and Griman ran their contribution study on the newspaper's parent company's Hewlett-Packard Co. HP 3000 III minicomputer running SPSS, Inc.'s Statistical Program for the Social Sciences.

Meanwhile, North Carolina's Charlotte Observer and the Institute for Southern Studies, a Durham, N.C., research group, have kicked off their own contribution monitoring projects. Both set up this systems this year.



NEWS

Session stirs disagreement on VDT-related threats

By Charles Babcock
CN New York Bureau

NEW YORK — Although critics still charge they are hazardous, VDTs do not emit any radiation known to be harmful, according to the West German scientist who investigated them for his government.

Ahmet Cakir, manager of the Ergonomic Institute for Social and Occupational Sciences in Berlin, told a New York conference that numerous studies show that the X-ray and ultraviolet radiation generated by VDTs is very small and is confined to the CRT.

"Discussion of the matter has created a new hazard — anxiety in pregnant women," Cakir told 150 listen-

ers at the World Conference on Ergonomics in Computer Systems here recently.

Another speaker, Laura H. Stock, coordinator of the Berkeley, Calif.-based VDT Coalition, said she continues to receive anecdotal evidence of hazards by talking to women who use VDTs.

"It's impossible to prove a negative, that a hazard doesn't exist," which is what critics are asking employers and the government to do, Cakir said. "I don't recommend we forget about it, but we can be calm about it."

One reason users of VDTs remain uneasy, despite studies showing no hazard exists, is because they re-

member the government once told them no danger existed from atomic tests, and some people who believed what they were told suffered for it, he added.

Frequent "sensational" news stories have created such alarm among VDT users who many have sought to be transferred from VDTs during a pregnancy or for the duration of childbearing years, he added.

Cakir did cite a 37% growth in neck, spine and back pain complaints among female data entry and clerical workers between 1975 and 1979, when VDTs came into widespread use. Such complaints now constitute one-third of the cost of health insurance in West Germany for female of-

fice workers. No such spurt in complaints occurred among blue-collar female workers, Cakir said.

Cakir and Stock agree that VDTs have changed the workplace and in many cases are the focal point for complaints about new stresses that accompanied the change.

Job reorganization, loss of personal contact and impersonal task assignment have threatened to break down the social fabric of the office and could impact workers' health, Cakir said.

"All work can be routed through a terminal. When one job is finished, the next automatically flashes on the screen," Stock said.

And the fact that a supervisor can monitor the total number of key-strokes executed by each worker at the end of the day lends a spying aspect to routine computer counting, she said.

For the majority of VDT users, who are women with average incomes of \$12,000 per year, office work more and more resembles assembly line factory work, she said.

Cakir said studies have been made of VDT users who spend as much time at terminals as female clerical workers, but who exercise more control over their jobs. These users tend to have fewer health complaints. News editing and computer programming were two occupations included in the latter study.

A problem with European VDTs that did not occur in the U.S. was screen flicker, caused by machines that operated at 50 Hz instead of the 60 Hz common in the U.S. The eye fatigue that resulted was one of the problems that led to VDT standards in West Germany and the Scandinavian countries, Cakir said.

Stock said her anecdotal evidence on the hazards of VDTs came from female workers at United Airlines in San Francisco who told her 24 out of 55 women have had miscarriages or children with minor birth defects.

She said she did not know what would cause such a high rate of reproductive disorders. "All I know is people tell me they have suffered these effects, and they seem to occur in clusters among women who use VDTs," she said.

Research study

Stock also cited recent research in Spain that found chick embryos were changed by exposure to conditions similar to what VDT workers encounter. Known as the Delgado study, its results have been duplicated in Spain, she said.

Stock agreed that there appeared to be no X-ray or ultraviolet radiation hazard from VDTs, but she said low-level, low-frequency electromagnetic pulses coming from VDTs may have an undetermined impact on human health.

Cakir said workers in modern cities frequently encounter electromagnetic pulses, but they have not been shown to cause harm. "We are surrounded by radio waves," he said. "Are we all sick?"

Cakir is the author of *Visual Display Terminals*, a 276-page book that describes the basic technology and uses of terminals. The World Conference on Ergonomics was sponsored by L. M. Ericsson, the Swedish telecommunications manufacturer.



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S R A

VDT user health standards: unwanted solution for some

By Charles Babcock

Or New York Bureau

NEW YORK — What solutions to problems in ergonomics did attendees of the recent World Conference on Ergonomics in Computing Systems most want to see?

Some said better use of the traditional design elements of sculpted keyboards, swivel chairs and non-glare screens.

Others said the quick adoption of advanced input devices, such as touchscreens and voice-activated commands.

A third group said beating back

the growing desire to set standards to solve problems in ergonomics.

Twenty states are considering legislation that would govern issues such as how much time office workers can be required to spend at VDTs or whether a pregnant woman should be given an automatic transfer out of a position that requires use of terminals.

Several European countries already have such standards, said speakers at the conference at the Plaza Hotel here.

"Temporary, total disability"

In 1983, a Canadian judge in Quebec recognized the complaints of a VDT worker about fatigue, anxiety, dizziness and headaches as a "temporary, total disability," said speaker Robert W. Bailey, a former researcher in the Human Performance Technology Center of Bell Laboratories and now president of his own firm, Computer Psychology, Inc. in Mendham, N.J.

In San Francisco this year, a judge awarded \$2,174 to a VDT worker who said she was unable to read, watch television or tolerate bright light after spending as much as nine hours a day at her word processing job, Bailey added.

In Maryland, a coalition of labor groups, including 9 to 5 and the International Typographers Union in Baltimore, is lining up behind a proposal slated to be introduced into the next session of the state legislature. The proposal seeks to limit the time a person can spend at a VDT to four hours a day, said Brian W. Christopher, executive director of the Maryland Committee on Occupational Safety and Health, a private, nonprofit agency monitoring support for the proposal.

Edward F. Peist, general manager of Spencer Data, a keyboard entry contract service located in Lakewood, N.J., said he would oppose writing into law a limit on the number of hours a person could spend at a VDT a day.

Limit time to four hours

"One of 9 to 5's recommendations is to limit time at a VDT to four hours. That could force a whole group of people into part-time employee status," said Peist, whose company uses 150 terminals. Spencer Data employees only type in documents, and Peist said members of 9 to 5 recoil at the tedium of such a job.

"We hire 40 people a year. Half of them we train and they consider it a step up [being a VDT operator] is better than being a waitress," he said.

Peist is drafting a position paper on ergonomics for the Delaware Valley Data Entry Users Group and in it will warn against arbitrary standards.

"One of the issues that scares me is the adoption of standards," said a psychologist employed by a large computer manufacturer, who asked not to be identified. "The Europeans require a certain height for the home row on a keyboard. There's a growing wave to come up with the answers here in the U.S. and the answers don't exist yet," the psychologist said.



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Federal filing systems forcing policy reviews

WASHINGTON, D.C. —

Efforts by several federal agencies to establish electronic filing systems raise a host of complex public policy issues that will be addressed in hearings next year, according to Rep. Glenn English (D-Okla.), the chairman of the U.S. House Subcommittee on Government Information, Justice and Agriculture.

In a recent speech to the Information Industry Association (IIA) here, English said he neither supports nor opposes the electronic filing systems,

but said they raise such policy questions as whether the government's contractor should be given a monopoly over government data and whether the systems will curtail public access.

English discussed agency plans to use computer and telecommunications technology to automate document

collection, storage, retrieval and dissemination activities. Automated systems are planned for the Securities and Exchange Commission (SEC), the U.S. Patent and Trademark Office, the Federal Maritime Commission and the U.S. Department of Agriculture, he said.

The SEC, for example, is implementing an electronic data gathering, analysis and retrieval (Edgar) pilot program enabling public companies to submit regulatory filings to the SEC electronically, as well as permitting electronic retrieval by the public.

Pilot electronic filing

The pilot contract was awarded to Arthur Andersen & Co., the accounting and consulting firm, and the first electronic filing was made last week, according to SEC officials.

In his speech, the congressman raised a few of the policy questions he said his subcommittee is investigating:

■ "Will the granting of monopoly rights over information distribution be a necessary element of contracts for the operation of electronic information systems?"

■ "If agencies develop systems using different hardware or software, will we end up with inconsistent or incompatible standards that will ultimately increase cost to the government and to the private sector?"

■ "Will contracts for electronic data system operations require agencies to curtail information availability?"

■ "When a contractor receives information for redissemination, how does an agency prevent the contractor from taking advantage of the fact that he is the first to have access to the data?"

In the case of the SEC's Edgar program, the latter issue already has surfaced. One of the losing bidders for the Edgar pilot project has raised the question of whether Arthur Andersen, whose business also includes advising clients on the content of reports filed at the SEC, would have inside access to the securities filings, according to IIA officials.

The SEC apparently is aware of such issues. Last month the commission sought public comment concerning the full-scale system contract to be awarded next year, raising questions about the monopoly issue, access fees and to what extent the SEC should regulate the contractor.

Concerning the contractor's access to inside information, the SEC said that the system affords all users immediate access to the data base. "The SEC's contractor has no more rapid access than the financial information services industry or the securities industry to the updated data base," the SEC stated.

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Venture capitalism changing

By **Blaine McInerney**
CV Staff

CAMBRIDGE, Mass. — High-technology entrepreneurs seeking financing for their start-up companies are facing tough scrutiny from venture capitalists who today are taking fewer chances with start-ups than they were several years ago, a California high-technology law-

yer said recently.

Speaking at a two-day seminar sponsored by the Computer Law Association, Inc. and the New England Computer Law Forum, Miles Gilburne of Blanc, Gilburne, Peters, Williams and Johnston, based in Los Angeles, said the last 12 months have created a new reality within the venture capital industry

— one that has investors taking a more conservative approach in their financing decisions.

Between 1978 and 1981, "there was a true spirit of intoxication in the industry," Gilburne said, bringing an infusion of venture capital to the computer industry. Anticipating rapidly expanding markets, venture capitalists quickly invested their money in everything from software companies to chip manufacturers, hoping to make the large profits expected by their partners, he said.

But, according to Gilburne, increased competition within the computer industry has brought decreased company earnings as well as some significant company failures, causing the once generous venture capitalists to take a closer look at their investments and harden their deal terms. As a result, he said, this new reality has eliminated the viability of once common financing scenarios.

One such scenario, Gilburne noted, is "costall" financing for companies planning to enter an area of the mass market (personal computers, for example) that is already occupied by a number of major players.

Investors are also skying away from long-term projects involving emerging technology like artificial intelligence because those companies are "slow to produce meaningful markets," he said.

In addition, venture capitalists are no longer relying on the theory that companies started by previously successful entrepreneurs will likewise succeed, he said.

Advice for start-ups

Because this new reality has made it increasingly difficult for entrepreneurial companies to secure financing, Gilburne offered a number of suggestions.

Entrepreneurs should first take the time to develop a sophisticated business plan and be sure of financing before making the leap from their established jobs to work on their start-up company, he said. Otherwise, changes in the market can alter plans for the product, and financing delays can quickly deplete seed money, he warned.

There is, however, a new type of financing vehicle that has recently emerged as a viable option for start-ups. According to Gilburne, the "strategic partner," can provide different forms of financing, including straight equity financing, debt, convertible debt, large advance orders and joint ventures in which proprietary rights are shared.

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NEWS

Financial departments to gain by influx of computers

By Shoshana Rubenstein
CWI New York Bureau

NEW YORK — Corporate treasurers using microcomputers linked to minicomputers and mainframes will be able to expand their role over the next five years, said Donald E. Smith, president of Manufacturers Hanover's Financial Management Systems, Inc.

With the help of computers, the corporate treasury staff can become the focal point for a variety of judgments on the corporation's affairs. Using microcomputers to work with information gleaned from minis and mainframes, the treasurer can better evaluate the flow of money and perform long-range planning, Smith said.

Smith addressed an assembly of 500 corporate treasury representatives recently at Manufacturers Hanover's world headquarters in New York. Its Financial Management Systems provides consulting services, including custom software, to corporate treasury departments to help automate their tasks.

Computers allow the cor-

porate treasurer to have access to the day-to-day transactions of the company as never before and also to evaluate the movement of money within it, Smith said.

One task that computers help the treasury staff perform is keeping track of corporate cash flow. "Let's try to make sure it's not in more than one pocket at a time, un-

less it's our pocket," he said. Mainframes, with their prodigious capacity to organize and store data, are tied to the accounting functions of a corporation, Smith noted. Analysis of the data base and reaching decisions based upon it is a task that may best be performed by a microcomputer. And strategic planning, in which "what-if" questions are applied to data that summarize today's decisions, may best be performed by a microcomputer, Smith said.

"The ultimate view of where technology and the corporate treasurer are head-

Such an interconnected system is still in the future. It may be five years before it is developed.

ed is to what I call the three 'Ms.' That is a mainframe or maxi, a mini and a micro working in concert to accomplish all the functions necessary to truly support treasury operation," Smith added.

Such an interconnected system is still in the future. It may be five years before it is developed, he said.

In a related announcement, Manufacturers Hanover spokesmen announced that larger companies are putting microcomputers to work in their treasury operations more quickly than smaller ones.

Eighty-seven percent of the treasury departments of companies with revenues of \$1 billion or more are using microcomputers. Only 67% of treasury operations in companies with revenues ranging from \$100 million to \$500 million are using micros, while 73% of the mid-range companies, whose revenues range from \$500 million to \$1 billion, are using micros, according to the survey.

The survey of treasury managers was conducted by Louis Harris and Associates for Manufacturers Hanover, 270 Park Ave., New York, N.Y. 10017.



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NEWS

Micro software deluge may impede standard setting

Report finds managers at odds with rising prices, compatibility void

WASHINGTON, D.C. — The lack of central over software packages that are purchased for microcomputer workstations has left managers in the private sector and the federal government groping for answers on how to reduce spiraling costs and enforce compatibility standards, according to an Arthur Young & Co. report.

The report, recently released at the Federal Computer Conference here, said the desire of managers to operate their own microcomputer workstations has led to an uncontrolled growth in software acquisition.

The software purchased to run on these systems has not been required to fit into an overall software standards strategy, and "few companies have attempted to define and enforce standard applications," the report said.

Share software use

However, both private sector companies and government agencies have taken some steps to take advantage of micro software utilization in their environments, according to the report.

These steps include attempting to negotiate volume discount purchases, avoiding duplicate software

evaluation exercises and limiting the range of differing software systems that must be supported.

The survey examined nine U.S. corporations and 13 federal agencies to see what levels of management controls were in existence for microcomputer support. It was completed in 1983, according to Arthur Young, a Big Eight accounting firm.

The results indicated that while both the private sector and the federal government had few concrete policies in place to control software proliferation, there were marked differences in the degree of support offered to users.

All of the private sector concerns actively monitored technology trends, disseminated information on technology, assisted users in selecting hardware, provided troubleshooting during operations, evaluated software packages and negotiated volume discounts.

However, only four companies designed and delivered training programs for users. Three concerns had established policies requiring compatibility between central mainframe architectures and micro software, and one had ordered standardized applications packages.

There is much less centralized con-

trol in federal agencies, particularly within the Department of Defense, the report continued. This was generally limited to efforts to promote the use of micros in government work and assistance to users when they were selecting a microcomputer or wished to negotiate volume procurements.

No mechanisms have been established to monitor the extent of proliferating software within federal agencies. Instead, procurement decisions have been left to the users of the shared system, who take responsibility for pushing the request through the bureaucracy, the report noted.

Meet to offer managers tips on net control

NEW YORK — Helping telecommunications managers to manage their networks better through 12 working strategies will be the focus of a two-day conference Oct. 22-23 at the Omni Park Central Hotel here.

"Twelve Telecom Management Strategies to Succeed in the Multi-Vendor Environment" is sponsored by BCR Enterprises, Inc., publishers of *Business Communications Review*.

The conference will present attendees with solutions for both voice and data communications problems proposed by industry representatives who have successfully implemented these methods.

Strategies to be discussed

Strategies to be discussed include restoration of one-stop shopping, evaluation of long-haul and local-loop alternatives, contract negotiation for the new era, computerized tools for telecommunications management and strategic planning for telecommunications.

At the conference, 17 telecommunications managers, consultants and suppliers will offer their approaches to dealing with problems such as loss of end-to-end service, bill reconciliations and validations and circuit delay.

The program costs \$775.

More information about the conference is available from BCR Enterprises, which is located at 950 York Road, Hinsdale, Ill. 60521.

With Hayes Inc.
modem and
TV, can reach the
mainframe through
the ports and

NEWS

Ecuador gets South America's second videotex system

QUITO, Ecuador — Last June, the South American country of Ecuador became the second country on that continent to establish a commercial videotex service.

Like Brazil, the only other South American country using videotex, Ecuador installed a French system based on France's Teletel Telephonie and Telegraph Administration's (FTT) Teletel videotex software and Minitel terminals. The system was installed by Banco Popular, one of Ecuador's largest banks.

Andrés Vallejo Arcois, bank vice-president, claimed, "The bank has always been preoccupied with having the most advanced technology and offering the most modern services to

its clients. In the case of the videotex system, we made a special effort for it to happen."

"We worked to offer primarily home and office banking services, but other videotex services like general news, games, horoscopes and recipes are also available," he explained. As the system's operator, Banco Popular reportedly is negotiating with potential service providers, including newspapers, travel agencies, airlines and department stores.

Initially, 800 Minitels were installed in Quito and Guayaquil, the country's two most heavily populated cities. The Minitels and the videotex services are available to customers at a base rate of \$30 per month,

which includes a choice of three types of terminals — color Minitels, monochrome Minitels or TV decoder devices with keyboards.

Future installations

François Vivier, the director of operations at Interstetics (the marketing agency for the French FTT), supervised the installation in Ecuador and said plans call for an additional 750 Minitels and decoders this year.

"Eventually," he noted, "Banco Popular expects to support 8,000 to 4,000 terminals which will serve the general population with all the traditional videotex services."

According to Manuel Mejía Delma, head of Banco Popular's data

processing department, the bank chose French technology after comparing it with systems from the U.S., Canada, West Germany and Japan.

"Some of the systems seemed sophisticated graphics," he said, "but we plan to use only limited graphics at the beginning to catch the user's eye."

I am convinced that videotex users will not want to complicate the page with graphics, which are costly and take a lot of time to appear when the user is waiting for his account balance.

The future of information

"French Teletel was simple to use and comparatively inexpensive," Delma indicated, "and we definitely think that videotex, together with microsystems, constitutes the future of information in the world."

In creating the system for Banco Popular, Interstetics consultants came up with a system that could be fully integrated with the bank's computerized data processing system.

Since there was no existing X.25 network in Ecuador, a private line with X.25 transmission was constructed over the 250 miles between Quito, in Ecuador's mountainous interior, and Guayaquil, on the Pacific coast. The cost city became the site for a concentrator that handles videotex and telephone traffic and routing. Because the mainframe and the concentrators are linked by the dedicated X.25 line, access to videotex service from either city will cost no more than a local phone call.

"The bank's Burroughs [Corp.] Mainframe was already serving them internally," Vivier explained. "What the bank needed was a front-end solution to make those same [DP] services — or part of them — available to customers outside the bank. Instead of creating a stand-alone videotex center, we integrated the videotex system with the bank's existing Burroughs computers."

It's a sinking feeling indeed.

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Guide explores micro-CPU link

MATTAWAN, Mich. — A guide to understanding and implementing a communications link between personal computers and microcomputers is available from Information Research, a microcomputer testing firm based here.

The second edition of "Making the Micro-Mainframe Connection" includes product reviews and tips on installation. The 40-page booklet primarily uses the IBM Personal Computer for the testing. Products tested include Micro-Tempus, Inc.'s Tempus-Link and Tempus-Data, Technical Analysis Corp.'s Irmx board groups and CXL, Inc.'s Pcon.

Other reports available from the company include "Word Processor Comparison Tables" and "Critique's Guide to Local-Area Networks."

The guide and other reports sell for \$39.95 each, including shipping and handling, and are available from Information Research, 10047 Paw Paw Lake Drive, Mattawan, Mich. 49071.

NEWS

Sicob showcases micros; distribution a focal point

By Les Saba
Special to CW

PARIS — The Sicob show in the prestigious Parialan exhibition center, in Defense, started out as a computer and office automation show, but over the years has evolved into a more general computer show, embodying home computers, peripherals and a special OEM section. Each year, there are two Sicob shows, but the one in autumn is usually the larger, with a total attendance of over 40,000.

This year's fall Sicob took place Sept. 19-20. IBM was on hand with the Personal Computer AT for the first time in Europe, and a number of other manufacturers including Data General Corp. and Ericsson Information Systems, Inc. chose Paris as the launching platform for new products. But apart from DG's impressive portable DG/One with 3.5-in. microfloppies, AT&T's Unix operating system and software to integrate the DG/One into the CEO environment of the larger DG machines, most of the attention went to the IBM product.

The Macintosh from Apple Computer, Inc. was one of the main attractions at the show, but there was a lack of good local (French language) software for it. Apple is already preparing their dealers for the Macintosh, which is expected to be introduced here shortly.

Digital Equipment Corp. took the occasion to display its Crystal operating environment software, billed as an alternative to windowing.

But because of the somewhat chauvinistic attitude of French customers and also of the French government, indigenous products have the inside track. Imports — even from other European Economic Community countries — are not of-

ficially limited, but hampered in practice.

While the sales projections for the personal computer market are still bright, the frenzy has gone. IBM is being watched closely by its competitors, and non-IBM-compatible products are given little hope of success. Distribution has become a main focal point. Gone are the days of the back room computer shop, and only the big brand names have a real presence in the computer store franchises. The lesser known

machine makers will have to reconsider their marketing approach. Some of them, for example DEC, with a new Professional 360, will go back to their OEM customers.

Televideo Systems, Inc.'s International Sales Vice-President Alan Platt indicated that Televideo is also refocusing. "We are turning away from the computer shops and the big chains and see our main strength in the value-added resellers, where the vertical market approach is more important. The

first- and second-tier distribution with simple retailing, is less appropriate for our products now. We are offering high-end (personal computer) and mid-tier (personal computer) systems now, which require the support (value-added resellers) can give."

Saba is the editor of a European microcomputer newsletter and a frequent contributor to Computerworld.

Meet to examine DP in food mart

DALLAS — The role of computers in the food industry will be the focus of the National American Wholesale Grocers Association's (NAWGA) Computer Conference and Exposition to be held at Loews Anatole Hotel here Oct. 28-31.

According to the sponsor, the target audience for the conference includes grocery wholesalers, food manufacturers, food service distributors, convenience store operators and specialty wholesalers.

Six general assemblies and 40 workshops will cover topics such as "Automatic Reordering," "Computerized Reckoning," "Customer Profitability Analysis," "Direct Store Delivery," "Distribution Billing and Inventory Control," "Financial Planning" and "Labor Planning."

The chief to attend the conference and exposition is \$395 for NAWGA members and \$465 for nonmembers. NAWGA is located at 201 Park Washington Court, Falls Church, Va. 22046.

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NEWS



**INTERNATIONAL
COMPUTER
NEWS NETWORK**

AUSTRALIA

CLAYTON — Rascal Australia Ltd. has agreed to manufacture and market abroad the local-area network designed here by Monash University.

TOTTENHAM — After a four-year relationship, Olex Sales Ltd. is about to drop its present vendor, Tandem Nonstop Pty. Ltd., in favor of another unnamed vendor. Olex, which has roughly 50 subsidiaries throughout the country, became Tandem's third installation in Australia in 1980.

BREDADE — The discrepancy of funds allocated to computer science students compared with those generated by engineering students in Australian universities was the subject of hot debate here recently. According to Andrew Lister, University of Queensland computer science dean, the imbalance has forced undergraduates into greatly overcrowded classes relying on obsolete equipment. Lister told the Australian Computer Society conference that the university spends on computer science students just 56% of what engineering students are allotted.

FRANCE

PARIS — CII Honeywell-Bull has introduced the Bull Questar 400, a series of monochrome and color work-

stations designed for use with the Bull information system product line within a direct storage access network.

The Questar 400 workstations feature cluster architecture and can operate as stand-alone workstations or interactively with a host processor, according to the vendor. Sources reported that Honeywell, Inc. will soon announce the workstation product in America.

JAPAN

TOKYO — Quotation Information Center K.K. and Hitachi Ltd. jointly announced an English-to-Japanese automatic translation software system. The product runs on Hitachi's Hitac M-240H mainframe, comes with a dictionary data base of 70,000

words and can translate the English language at about 20,000 words/hour, according to the vendors. Quick plans to use the system to translate English economic publications and market the information as a service to Japanese financial houses.

At the same time, Fujitsu Ltd. launched two automatic translation systems, called Atlas-1 and Atlas-2, that translate English-to-Japanese and Japanese-to-English, respectively. These systems have dictionary data bases of 50,000 words and can reportedly translate at rates up to 60,000 word/hour. These products run on Fujitsu's Facom M series of mainframes and the B-3000 series of minicomputers. They will lease for \$1,500/mo and \$2,500/mo, respectively, when they become available next spring, the vendor said.

NETHERLANDS

AMSTERDAM — After bidding against IBM, Sinclair Research Ltd. and Acorn Ltd., the Dutch company Tradecom won the rights to sell its Newbrain microcomputers in India. Some 1,500 systems will go on the Indian market this year, sources reported.

AMSTERDAM — European automakers have banded together to create the Organization for Data-Exchange by Teletransmission in Europe. The computer-based exchange will operate among manufacturers, subcontractors and related supply industries, according to a spokesman.

UNITED KINGDOM

LONDON — New partners IBM and British Telecom International are clashing over who will link insurance companies here. The two firms have entered rival proposals for a data communications network to the British Insurance Association. The competition, which comes despite the two giants' recent agreement to run IBM's data network together, will pit British Telecom's Packet Switch-stream Network against the IBM network.

LONDON — Brian Oakley, director of the fifth-generation Alvey project, has been rethinking the UK's research strategy. He wants to establish a hardware systems architecture directorate to "draw together all the architectural strands within the various elements of the project and (apply) real thrust to that element."

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program allows you to access information up to 15 times faster than a floppy.

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NEWS



OFF THE PRESS
George Hamer

BOOK REVIEWS

**INFOWORLD'S
ESSENTIAL GUIDE TO
THE IBM PC**

Edited by Frank Dorfner Jr.
and the editors of *Infoworld*

The *Infoworld* format of explanatory articles fol-

lows. The outgrowth is this book.

The focus is on the back-room workers, the unseen 275,000 estimated in 1980 to work in computer operations. They lack the formal education to move into programming, and yet that is exactly the next step they want to take.

Managers must assess the state of their operations training. A major section of the book comprises forms to be filled out to identify train-

ing needs at various functional levels.

Berkeley emphasizes the different training required for task-oriented operators, function-oriented programmers, analysts and managers. Programmers increase their knowledge about a subject. Computer operators increase their experience by doing specific tasks. In-classroom, generic courses may suit programmers, but computer operators need training at their work site in the specific jobs

they are expected to do. The author argues that computer operations requires a full-time training officer who comes from that particular background.

Trained operations personnel will look, of course, for promotions. Job descriptions set up the environment in which they can move, prescribing the abilities and education needed to move up. This book presents 26 pages of sample job descriptions.

Currently, Berkeley says,

"There are no career guidelines/paths to follow. And there has been no concerted industry effort to remedy this situation."

There are benefits to employer and employee alike. "If operators are to be more efficient, if production is to keep up with the increasing demands on the computer center, if attitudes toward work and the organization are to improve, if morale is to improve, there has to be a career path for operators,



lows by reviews works well translated from the magazine to a book.

The articles tell where to find help (users groups, periodicals); how to communicate with the IBM Personal Computer (mainframe links, local networks, file servers); and how to transfer software (running CP/M programs by emulator or Zilog, Inc. 280 processor boards).

In the review section, Advanced DB Master from Stoneware, Inc. ranks high in the data base manager category, as does Data Base Manager II from Alpha Software Corp., described as "a product of the future" available today.

Norton Utilities from Peter Norton Computing wins accolades marks in all areas — performance, documentation, ease of use and error handling — as elegantly designed. The product primarily helps users recover lost data.

The MT-100-L from Minnemann Tally Corp. scores high as a dot matrix printer, as does the Hayes Microcomputer Products, Inc. Smartmodem 1200 as a modem.

For the well-supported reasons behind these choices, you need to read the book.

Paperback, 244 pages, \$16.95, ISBN 0-06-660008-1. Harper & Row Publishers, Inc., Electronic and Technical Publishing, 10 E. 53rd St., New York, N.Y. 10022.

**COMPUTER
OPERATIONS
TRAINING**

By Peter Berkeley

"Training was virtually nonexistent," the author writes about a visit to a former employer. "Turnover was high, morale was a problem and operators were becoming frustrated at getting nowhere fast, in terms of a career." So Peter Berkeley launched a training program for this troubled operations

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PROTOCOL. THE END OF THE DP

NEWS



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**THE HANDBOOK OF
COMPUTERS AND
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Edited by Arthur Seldman
and Ivan Flores

which will combine formal
training activities with on-
the-job activities."

Hardcover, \$22 pages,
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Dictionaries often offer
just enough of an explana-
tion to spark new questions.
This handbook from Van
Nostrand goes much further,
covering a vast amount of

computer terminology from
the top down. More than 50
writers explore major topics
in overviews that work their
way clearly and precisely to
definitions of individual
words. Tricky terms and con-
cepts are more easily under-
stood as presented here.

Increasing specialization
and rapid technological ad-
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even the most experienced to
keep up in all areas. This
book offers the basics and
then goes quickly into details

in subjects such as very
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tation, robotics, Fortran and
data base technology.

Hardcover, 696 pages, 630
illustrations, \$77.50, ISBN 0-
442-33181-0. Van Nostrand
Reinhold, 135 W. 50th St.,
New York, N.Y. 10030.

BOOKS OF NOTE

DIRECTORY OF INFOR-

MATION AGE NEWSLET-
TERS, a directory of 360
publications, published by
Frank Communications
Group, Spiral-bound paper-
back, 65 pages, \$66, Frank
Communications Group, P.O.
Box 144, Mont Vernon, N.H.
08057.

TECHNOLOGY CROSS-
ING BORDERS, a look at the
management of international
technology flow, edited by
Robert Stobough and Louis T.
Wells Jr., Hardcover, 328
pages, \$29.50, ISBN 0-87154-
185-6, Harvard Business
School Press, Boston, Mass.
02163.

COMPUTER GRAPHICS
GLOSSARY, a guide for the
computer-aided design and
manufacturing professional,
by Stuart W. Hubbard, Paper-
back, 100 pages, \$15.50,
ISBN 0-442-33618-2, Van
Nostrand Reinhold, 135 W.
50th St., New York, N.Y.
10030.

THE COMPUTER DATA
AND DATABASE SOURCE
BOOK, an encyclopedia of
public and commercial data
bases accessible by comput-
er by Matthew Leslie, Paper-
back, 900 pages, \$9.95, ISBN
0-360-05942-x, Avon Books,
The Hearst Corp., 1790
Broadway, New York, N.Y.
10019.

ALL OF YOUR TERMINALS.

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your smart PCs into dumb 3278 terminals. Terminals
that can only handle one task at a time. Terminals with
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Pop-up menus for ease of use. 3278 keyboard map-
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So we can help you connect virtually any ASCII
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NIGHTMARE.

Meet to aim at business telecom

WASHINGTON, D.C. — A
one-day seminar, "Optimiz-
ing Multinational Business
Telecommunications," is
scheduled for Oct. 24 at the
University Club of Washing-
ton here.

The seminar will discuss
how multinational compa-
nies can optimize their tele-
communication facilities. Is-
sues planned to be addressed
include: foreign regulations
and data-flow barriers.

Rugh Donaghy, vice-
president of industry rela-
tions at Control Data Corp.
and chairman of the U.S.
State Department's Business
Advisory Committee on
Transborder Data Flow, is
one of the scheduled speak-
ers.

Joining Donaghy will be
Delbert Smith, an attorney
specializing in international
satellite communications
law; Edward Regan, vice-
president of telecommunications,
operations and regulation
at Manufacturers
Hanover Trust Co.; and G.
Russell Pipe, president of
Transnational Data Report-
ing Service, Inc.

The registration fee is \$75,
and more information is
available from Transnational
Data Reporting Service, Inc.,
P.O. Box 2036, Springfield,
Va. 22114.

NEWS



MANAGING ON THE MOVE

Armco Information Resources Management has announced the following promotions: **GEORGE H. HOMAN** has been named manager of telecommunications, and **DONALD R. MALARKEY** has been named manager of strategic planning, measurement and technology. **JOSEPH J. OSWALD** has been named manager of security, quality assurance and data management, and **PHILIP N. ADAMS** has been named manager of productivity and quality improvement. **ROBERT M. JOHNSON** has been appointed manager of training and development. Armco Information Resources Management is located in Middletown, Ohio.

Homan will be responsible for planning, development and coordination of voice and data networks throughout Armco. He joined Armco in 1961 at the Middletown Works. Homan was named manager of Armco's regional computer center for industrial and systems engineering in 1976 and became manager of management support systems for corporate human resources in 1979.

In 1981 he was named manager of operations and services, corporate information resources management. Homan is a graduate of Michigan University with a bachelor's degree in industrial technology.

Malarkey will develop planning and measurement methods and will coordinate the information of new technologies at Armco.

He joined Armco in 1960 at the Butler Works in Pennsylvania. At the Middletown general office, he has been manager of information resources management administration.

Malarkey graduated from Pennsylvania State University with a bachelor's degree in industrial engineering. He also has a bachelor's degree in education from Edinboro College in Pennsylvania.

Oswald will be responsible for computer security, quality assurance and data management functions and will also be in charge of planning and developing high-quality computer systems.

He joined Armco at the Middletown Works as a programmer in 1966. He moved to the Middletown general office as a staff systems engineer in 1973.

After moving to Bellefonte Insurance in 1980 as assistant vice-president of business systems, he became vice-president of production and systems in 1982.

Oswald graduated from the University of Cincinnati with a bachelor's degree in management science and

with a master's degree in quantitative analysis.

Adams joined Armco in 1964 as a research technician. He transferred to the Ashland Works in Kentucky as a senior industrial engineer in 1973.

In 1978 he became manager of process and technical computing for corporate industrial engineering. Adams was appointed program manager of corporate productivity and quality in 1981.

He is a graduate of the

University of Dayton with a bachelor's degree in mathematics.

Johnson will be responsible for education and professional development programs for information resources management.

He joined Armco in 1967 at the Baltimore Works in Maryland. He was named manager of systems development for industrial and systems engineering in Middletown in 1976. In 1982, he was appointed manager of



Flory

planning and control for corporate information resources

management.

Johnson graduated from Loyola College in Baltimore with a bachelor's degree in mathematics.

Harte-Hanks Communications, Inc. has announced the following promotions in its Information Services Department: **HOMER J. FAUCHEUX** was named corporate director of systems procurement services. **BRUCE FLORY** was named corporate director of busi-

CALIFORNIA BUSINESS ON THE MOVE.



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FIBER OPTIC SERVICES: The world's most advanced concept in communications.

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As a result, Fiber Optic

NEWS

ness information services. JAMES B. STEELE has been named corporate director of networking processing services.

Fauchaux will be responsible for supporting all company divisions and the corporate office in hardware capacity planning and the purchasing of computer hardware and software.

He previously worked for Datapoint Corp. as manager of user documentation and for City Public Service as



Pierre Fauchaux joined Harte-Hanks as manager of production scheduler.

Ranks in 1979 and has been manager of computer hardware evaluation for the past year. Before that, he was in charge of the corporate data center.

Fry will be responsible for systems and programming for the company's newspapers and cable television operations. He also heads the department's Pathfinder group and coordinates information systems planning for Harte-Hanks. He joined the company in March



Steele is manager of newspaper systems. Before that, he

was product marketing manager for Intel Corp. in Austin, Texas.

Fry attended the University of Texas, majoring in computer science.

Steele will be responsible for overseeing the technical support group and computer operations at the corporate office and for managing the companywide data communications network now being developed.

He joined Harte-Hanks in July 1983 as manager of the corporate data center.

Before that, he was with Bendix Corp. as operations manager of the corporate data center in Ann Arbor, Mich.

Steele has a bachelor's degree in management from Oakland University and has done graduate work toward a master's of business administration from Eastern Michigan University.

Harte-Hanks operates in 28 states. The company owns and operates 27 daily newspapers and 75 non-daily publications, including weekly newspapers, advertising publications produced by newspapers and a trade publication for the radio industry.

your per-message transfer costs. More benefits? Certainly.

- Freedom from system overload.
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 - Highest security. No one can tap your line of communication without immediate detection. Or listen in on your transmissions with an outside receiver.
 - High space efficiency. Fiber optic cable is about one-tenth the size of conventional cables of comparable capacity. And it weighs nearly 100 times less. Which makes installation easy and flexible.
- Together, benefits like these make Fiber Optic Services an unprecedented solution to virtually all of your business communications needs.

THE DIGITAL TERMINATION SYSTEM: A fast, efficient new communications link to your company's local market and to all of the business opportunities in it.

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Fortunately, the solution is easy, affordable, and available today from Pacific Bell.

It's the Digital Termination System, an advanced microwave-based system created especially to meet your company's needs for high volume, high speed data transmission within your local market.

The Digital Termination System transmits videotext messages, graphics, freeze frame video, and computer data by microwave from your location to a signal relay point near you, and then on to a destination you specify—within a ten mile radius—that is equipped to receive the microwave signals.

Your messages are transmitted with a combination of speed, efficiency and accuracy that no conventional system can match. Annoying, time consuming complications are eliminated.

What's more, the Digital Termination System gives you other important advantages, such as:

- A flexible bit speed that allows equipment to support virtually any synchronous transmission speed from 2.4 KBPS to 96 KBPS.
- Extremely low error rates—about 1 per 100 million bits of information.
- High quality business and graphics transmission.

Now

opportunities it's missing with its present system.

Which of these new high-performance systems will do the most for your business? This SPECIAL OFFER will help you decide.

Mail the coupon below, and we will arrange for a Pacific Bell specialist to give you a **FREE EVALUATION** of your present and future business communications requirements. Plus specific examples of how Fiber Optic Services and the Digital Termination System can help you bring your company's long-range goals closer to today. And there's no obligation. For immediate service, call toll free, 1-800-428-6728, Ext. 260.

NOTE: Service availability is limited. Please call for details.

Fiber Optic Services are provided only through a special dedicated services toll line. The Digital Termination System is available pending regulatory approval from the FCC and CRTC.

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WILLES A. LEBOURVILLAU has been appointed director of information systems for ITT Avionics Division in Watley, N.J. In his new position, he will be responsible for operations and commercial data processing activities for ITT Avionics, including systems development, programming and operations and information services planning and development.

Previously, he was director of data processing for the Lederle Laboratories Division of American Cyanamid Co. for 10 years.

He most recently was director of information services for Reichhold Chemicals for two years, with corporate responsibility for all data processing, voice and data communications and office automation activities.

Lebourvillau holds a B.S. and an M.S. in mechanical engineering from Princeton University.

Following graduation, he was an instructor in the Princeton University School of Engineering for two years.

ITT Avionics Division is a high-technology military defense contractor specializing

See MANAGEMENT page 10

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NEWS

MANAGERS from page 40

in electronic self-protection systems for tactical and strategic aircraft and advanced command and control communication systems for tactical forces.

STEVE GRANT has been promoted to manager of data services, MIS, at Zurich-American Insurance Co. In his new position, he will direct the ongoing development of systems that provide management with the data necessary to make key business decisions.

Grant joined Zurich-American as a business systems analyst in 1981. He was promoted to assistant manager of data services, management reporting, in 1982 and became assistant manager of data services, corporate systems, earlier this year.

He graduated with a degree in business administration from Western Illinois University.

RODEENA DAVIS has been appointed vice-president/associate director of the data processing division for the Bowers Savings Bank in New York.

Davis joined Bowers Savings in 1973 as an associate systems analyst and has since held various positions within the DP division. These included systems analyst, senior systems analyst and project manager.

She became an assistant vice-president in 1981. During the past three years, Davis has served as quality assurance manager and more recently as data center services manager in the DP division of Bowers Savings Bank.

Davis graduated from California

Polytechnic University and received a bachelor of science degree in mathematics. She most recently completed a graduate program in computer science at New York University.

GARY R. MAURER has been appointed manager of corporate business information systems in the management information services department at Allentown, Pa.-based Air Products and Chemicals, Inc.

In his new position, Maurer will be responsible for the development and support of information systems for the company's corporate staff departments and support the corporate

systems requirements of the company's operating groups.

Maurer joined Air Products in 1968. He holds a B.A. degree in natural sciences from Kutztown University and an MBA from Lehigh University. Air Products and Chemicals is an international supplier of industrial gases and equipment, chemicals

and engineering services.

RICARDO A. DIAZ has been appointed vice-president of manufacturing programs on the corporate staff for Harris Corp. in Melbourne, Fla. He will be responsible for the enhancement of all aspects of Harris' manufacturing operations in the U.S. and abroad.

Prior to joining Harris, Diaz worked with a broad range of clients in manufacturing technology and general management consulting assignments.

Before that he spent 10 years with Westinghouse Electric Corp. as an electronic design engineer and senior project manager.

Diaz graduated from the Catholic University of Cordoba, Argentina, with a degree in electronic engineering. He subsequently received master's degrees in electrical engineering and in management from the University of Pittsburgh.

PAUL M. LEMERISE will join the Anaheim, Calif.-based Division of Carter Hawley Hale Stores, Inc.'s Information Services Division as divisional vice-president in charge of office systems.

Most recently, Lemerise was director of information and technical services at Petco-Lewis Corp. in Denver, where he was responsible for office automation and data base administration.

Lemerise received his B.A. from Boston College and began his data processing career 18 years ago at Raytheon Co.

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SIS Workbook lists seminars

NEW YORK — Seminar Information Service (SIS) has announced publication of a guide to more than 3,200 business and technical seminars and workshops around the country.

This fourth edition of the SIS Workbook includes sections on DP, communications, minicomputer and microcomputer-related topics, general management and organization development among others.

The SIS Workbook is broken into three separate sections: seminars listed alphabetically by topic, organizations sponsoring the seminars and a calendar of seminars that covers the period from October 1984 through March 1985.

The price of the SIS Workbook is \$195, which includes a monthly supplemental newsletter.

Additional information is available from SIS, which is located at Suite 3141, 175 Fifth Ave., New York, N.Y. 10010.

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NEWS

Mini saves emergency center \$250,000 annually

GLENVIEW, Ill. — When Jim Clausen gets a call at his post at the Regional Emergency Dispatch (RED) Center here, he immediately has a variety of information available that will help him contact an emergency vehicle in about 30 seconds and send it to an emergency site in one of seven Chicago suburbs.

That's down from about

45 seconds before we computerized the system," Clausen said.

He and another dispatcher, Tom Chiero, are responsible during their shift for getting the closest possible vehicle to a site where the situation may indeed be a matter of life or death.

Using a VDT, Clausen can immediately determine a

number of things that will help get the vehicle to the site faster: where the call came from, what kind of building or structure to look for and whether the street runs north and south or east and west.

The system already has preselected the closest appropriate vehicle to the site, regardless of which suburb it

might be in. If the closest vehicle is tied up on another call, the system already has a second and third choice available on a priority basis.

But the town of Glenview has not always had the computing power necessary to perform such on-line dispatching. Four years ago, the town was using an IBM System/3 computer with punch

cards to perform municipal data processing functions. When that system was no longer able to handle the town's volume of processing needs quickly enough, officials went looking for another system.

According to Dennis Lauer, finance director for Glenview, the town evaluated alternative systems from five vendors. Lauer conceded, however, that he was partial to MAI/Basic Four Information Systems, Inc. hardware because he had experience with it at a former job. In addition, he had gained some familiarity with software programs for municipal applications that run on Basic Four hardware.

Heart of system

The town finally selected Basic Four's System 710 minicomputer as the heart of its system. Over the past several years, Glenview has expanded the system with Basic Four equipment to include three 768K-byte disk drives, nine VDTs, three multifunction display terminals, four letter-quality printers, two serial-character printers and Basic Four's Dataword word processing program. An application package for municipal functions from A. E. Kiewit and Associates, Inc. of Glenview provides programs for the fire, police, public works, finance and administration, building and zoning departments.

Lauer said the hardware/software combinations have saved the affluent North Shore Chicago suburb more than \$250,000 annually. He said Glenview's coffers have increased \$45,000 each year from the more efficient collection and processing of annual vehicle registration revenues.

The Dataword system displays the village code, saving Glenview an estimated \$12,000 annually in printing and updating costs; automatic accounting functions have added another \$44,000 in savings, largely by reducing the accounting staff from 13 to 11 persons, Lauer said.

Payroll processing costs have been reduced by \$6,000 annually, and an escrow control savings of \$22,000 has been realized because the system provides a closer management of cash flow, he said.

Those figures do not include Glenview's contribution to the regional RED Center, which Lauer said saves the town an estimated \$100,000 each year.

"Each fire department used to have approximately eight dispatchers to handle emergency calls," he said. "Now it takes eight dispatchers to run the system for all seven departments."

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NEWS

CALENDAR

WEEK OF OCT. 14

OCTOBER 14-16, CHICAGO — National Retail Payment Systems Conference. Contact: Interfinancial Association, 21 Tunal Vista Blvd., Corte Madera, Calif. 94555.

OCTOBER 14-16, NORTH PALM BEACH, FLA. — '84 Shipboard Executive Forum. Contact: Cheryl Paton McManamy, Seybold Publications, Inc., Suite 612, 148 State St., Boston, Mass. 02108.

OCTOBER 15-16, ORLANDO, FLA. — Export Systems Seminar. Contact: TTI Seminars, Department EEK, P.O. Box 9006, 3430 Kashiwa St., Turrone, Calif. 90610.

OCTOBER 15-16, CHICAGO — Tape Library Management Seminar. Contact: TLC Tape Library Consulting, 3 Rock Royal Road, Yardville, N.J. 08550. Also being held Oct. 15-16 in Dallas.

OCTOBER 15-17, ANAHEIM, CALIF. — The Fourth Annual Teleconferencing Users Conference. Contact: Applied Business Telecommunications, Box 5106, San Ramon, Calif. 94583.

OCTOBER 16-17, CHICAGO — Introduction to Data Communications. Contact: Systems Technology Forum, 9090 Fern Park Drive, Burke, Va. 22015.

OCTOBER 16-17, SAN DIEGO — Forwardness — Its Time Is Here. Contact: Jewel Peyton, Dataquest, Inc., 1290 Riddler Park Drive, San Jose, Calif. 95131.

OCTOBER 15-17, CHARLOTTE, N.C. — Society for Computer Applications in Engineering, Planning and Architecture (Socpa), Inc. Fall Conference. Contact: Patricia C. Johnson, Socpa, 358 Hangerford Drive, Rockville, Md. 20850.

OCTOBER 16-17, NEW YORK — Technology Opportunity Conference. Contact: Technology Opportunity Conference, P.O. Box 14817, San Francisco, Calif. 94114.

OCTOBER 15-17, WASHINGTON, D.C. — Decision Support Systems: New Directions in Management Support. Contact: U.S. Professional Development Institute, Department ABCD, 1630 Elton Road, Silver Spring, Md. 20903.

OCTOBER 15-19, NEW YORK — Data Base for Experienced Designers. Contact: Elise Rabalais, Learmonth & Burchett Management Systems, Inc., No. 406, 2900 N. Loop W., Houston, Texas 77062.

OCTOBER 16-19, NEW YORK — CROS Command-Level Programming. Contact: Syntex, Inc., 25 W. 36th St., New York, N.Y. 10018.

OCTOBER 16-19, SAN FRANCISCO — Data Base Development Workshop. Contact: Elise Rabalais, Learmonth & Burchett Management Systems, Inc., No. 406, 2900 N. Loop W., Houston, Texas 77062.

OCTOBER 16-17, FRAMINGHAM, MASS. — New England Association for Information and Image Management Equipment Show. Contact: Herbert Whiffen, Micrographic Systems, Bradstone, Mass. 02184.

OCTOBER 16-17, NEW YORK — Integrating the Mainframe and the Micro in the Corporate Environment. Contact: Institute for Advanced Technology, Suite 108, 1483

Santa Monica Blvd., Santa Monica, Calif. 90404.

OCTOBER 16-18, SAN JOSE, CALIF. — The West Coast Electronic Office Expo & Conference. Contact: Cartridge & Associates, Inc., Suite 308, 4090 Monpark Ave., San Jose, Calif. 95117.

OCTOBER 16-18, NEW YORK — Data Operating System Symposium & Conference. Contact: Robert P. Hirkfeld, National Exposition Co., 14 W. 40th St., New York, N.Y. 10018.

OCTOBER 16-18, LONG BEACH, N.Y. — Implementing Local-Area Networks. Contact: Ruth Dordick, Integrated Computer Systems, P.O. Box 45-605, 6906 Arroyo Place, Los Angeles, Calif. 90045.

OCTOBER 17-18, CHICAGO — IBM Data Base Strategies. Contact: Software Institute of America, 3

Windsor St., Andover, Mass. 01810.

OCTOBER 17-19, VANCOUVER, B.C. — Data Communications — A Complete Overview and Update. Contact: Douglas Grube, Data-Tech Institute, P.O. Box 568, 265 Franklin Ave., Nutley, N.J. 07110.

OCTOBER 17-21, CHICAGO — National Office Products Association's 1984 Convention and Exhibit. Contact: National Office Products Association's Convention Department, 301 North St., Alexandria, Va. 22314.

OCTOBER 18, NEW YORK — International Business Management Executive Briefing. Contact: Research & Planning, Inc., 215 First St., Cambridge, Mass. 02142.

OCTOBER 18, ARLINGTON, VA. — First Annual Information Resource Management Seminar. Contact: Informatics General Corp., Suite

4706, 1775 E. Jefferson St., Bethesda, Md. 20812.

OCTOBER 15-19, WASHINGTON, D.C. — Software Verification and Validation. Contact: Education Foundation of the Data Processing Management Association, Department SVV, P.O. Box 3608, Torrance, Calif. 90510.

OCTOBER 15-19, WEST ORANGE, N.J. — Personal Computing Workshop for Executives. Contact: Information Center Service, Inc., 1111 E. Putnam Ave., Riverside, Conn. 06878. Also being held Oct. 24-25 in Westport, Conn., and Oct. 28-30 in Boston.

OCTOBER 18-19, WASHINGTON, D.C. — Database Network Design & Planning. Contact: Probe Research, Inc., P.O. Box 660, Morristown, N.J. 07960. Also being See OCT, page 54

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NEWS

OCT. Item page 53

held Oct. 22-23 in San Francisco.

OCTOBER 19, BURBANK, CALIF. — Overview for Developers, Designers and Managers. Contact: IMS Consulting, Inc., 16530 Ventura Blvd., Encino, Calif. 91436.

WEEK OF OCT. 21

OCTOBER 21-24, TOBACCO — National Retail Merchants Association Retail Systems Technology & Communications Conference. Contact: National Retail Merchants Association, 100 W. 31 St., New York, N.Y. 10001.

OCTOBER 21-24, MIAMI — International Data Corp.'s 1984 Fall Executive Conference. Contact: Diane Tosta, International Data Corp., 6 Spinn St., Framingham, Mass. 01701.

OCTOBER 22, SADDLE BROOK, N.J. — Dealing with Vendors & Suppliers. Contact: Performance Seminar Group, 11 Commerce St., Norwalk, Conn. 06850.

OCTOBER 22-24, ATLANTA — Fundamentals of Data Communications. Contact: American Management Association, 156 W. 50th St., New York, N.Y. 10020.

OCTOBER 22-25, NEW YORK — Structured Analysis & Design Techniques. Contact: Elise Babalis, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77002.

OCTOBER 22-23, CHICAGO — Software Tools for Distributed Decision Support Systems. Contact: Software Tools Conference, Suffolk University, Boston, Mass. 02106. Also being held Oct. 28-29 in San Francisco.

OCTOBER 22-24, WASHINGTON, D.C. — Oxford Software International User Group Meeting. Contact: User Group Coordinator, Oxford Software Corp., 174 Blvd., Westbrook Heights, N.J. 07804.

OCTOBER 22-24, LOS ANGELES — International Computer Negotiations Third-Party Leading Seminar. Contact: International Computer Negotiations, Suite 1707, 300 St. Andrews Blvd., Winter Park, Fla. 32782.

OCTOBER 22-24, BROOKLYN, N.Y. — Applications of Microcomputers. Contact: Dr. C. Vapjakis, International Society for Mini and Microcomputers Symposium, School of Engineering, Pratt Institute, Brooklyn, N.Y. 11205.

OCTOBER 22-25, WASHINGTON, D.C. — Software Development and Maintenance in the Federal Government. Contact: U.S. Pro-

fessional Development Institute, Software Development in Government, 1650 Elton Road, Silver Spring, Md. 20903.

OCTOBER 22-26, WASHINGTON, D.C. — How to Develop an Effective Long-Range Data Processing Plan. Contact: Dr. Robert Koston, Koston Associates, 11317 Old Club Road, Rockville, Md. 20851.

OCTOBER 22-26, NEW YORK — Application Programming. Contact: Syed,

Inc., 35 W. 35th St., New York, N.Y. 10001.

OCTOBER 22-26, BURBANK, CALIF. — Application Development. Contact: IMS Consulting, Inc., 16530 Ventura Blvd., Encino, Calif. 91436.

OCTOBER 23, HARBROUCK HEIGHTS, N.J. — Service Management Seminar and Trade Show. Contact: Miles Urban, Global Unimax, 4 North St., Waldwick, N.J. 07463.

OCTOBER 23, NEW

YORK — T-1 Carrier Strategies The New Networking Imperative. Contact: The DMW Group, Inc., 3020 Hagback Road, Ann Arbor, Mich. 48104.

OCTOBER 23-24, BOSTON — Information Centers. Contact: Software Institute of America, 8 Windsor St., Andover, Mass. 01810.

OCTOBER 23-26, LOS ANGELES — Desktop Support Systems. Contact: Software Institute of America, 8 Windsor St., Andover, Mass.

01810.

OCTOBER 24-26, NEW YORK — IBM vs. AT&T Second Onn. Contact: Marilyn Chantson, The DMW Group, Inc., 3020 Hagback Road, Ann Arbor, Mich. 48104.

OCTOBER 25-26, WASHINGTON, D.C. — Subscribing a Local-Area Network. Contact: Marketing Manager, Technology Concepts, Inc., Old County Road, Sudbury, Mass. 01776.

OCTOBER 24-26, BOSTON — Experts on Net-

"THE SYSTEMS I BUY TODAY
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NEWS

work. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90408.

OCTOBER 24-26, CHICAGO — Implementing and Managing Information Systems. Contact: American Management Associates, P.O. Box 318, Saranac Lake, N.Y. 12848.

OCTOBER 24-26, ST. LOUIS — Software Quality Assurance Seminar. Contact: Gilbert & Associates, 10812 Olive Road, St. Louis,

Mo. 63141.

OCTOBER 24-26, WASHINGTON, D.C. — Equal Access: Lessons Learned in Charleston, Minneapolis and Other Equal-Access Markets. Contact: Telestrategies, Inc., Box 874, 6842 Elm St., McLean, Va. 22101.

OCTOBER 25-26, ATLANTA — The Sixth Annual Atlanta High-Technology Venture Capital Conference. Contact: Betty Furber, Department of Continuing Education, Georgia Institute

of Technology, Atlanta, Ga. 30632.

OCTOBER 25-26, BOSTON — How to Plan and Utilize Your Voice System. Contact: Probe Research, Inc., P.O. Box 800, Morrisville, N.J. 07960.

OCTOBER 26-30, COLOGNE, WEST GERMANY — Organisations-Colloquium '84: Fifth International Office Trade Fair. Contact: Messen und Ausstellungen-Ges.m.b.H. Köln, Postfach 21 07 00, 5000 Cologne, West Germany 21.

OCTOBER 26, NEW YORK — Automating the Not-For-Profit Sector. Contact: Center for Management, Box 630, 17 Lexington Ave., New York, N.Y. 10010.

OCTOBER 26, BOSTON — Symposium. Contact: QED Information Sciences, Inc., QED Plaza, P.O. Box 181, Wellesley, Mass. 02151.

WEEK OF OCT. 29

OCTOBER 29-30, SAN

FRANCISCO — Future Trends & Opportunities: The Next Five Years in Telecommunications & Microcomputers. Contact: Creative Strategies International, 434 Stevens Creek Blvd., San Jose, Calif. 95128.

OCTOBER 29-31, WASHINGTON, D.C. — Managing Financial & Personnel Transactions. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90408.

OCTOBER 29-31, WASHINGTON, D.C. — Teaching Computer Software Producing Defect-Free Systems at Minimal Cost. Contact: U.S. Professional Development Institute, Teaching Computer Software, 1630 Elton Road, Silver Spring, Md. 20903.

OCTOBER 29-31, LOS ANGELES — Financial Information Systems — Integrating Personal Computers. Contact: National Institute for Management Research, P.O. Box 2727, Santa Monica, Calif. 90408.

OCTOBER 29-NOVEMBER 2, NEW YORK — CROS Macro-Level Programming. Contact: Syzed, Inc., 35 W. 36th St., New York, N.Y. 10001.

OCTOBER 29-NOVEMBER 2, ORLANDO, FLA. — IDMS-DC Programming Workshop. Contact: Sherris Harris, Harris Education Center, Suite 507, 6230 S. Orange Blossom Trail, Orlando, Fla. 32809.

OCTOBER 29-NOVEMBER 2, WASHINGTON, D.C. — Comparative Data Base Management Systems. Contact: Chip Blois, George Washington University, Washington, D.C. 20052.

OCTOBER 29-NOVEMBER 2, WASHINGTON, D.C. — Microcomputer Application Workshop: Evaluating Microcomputers Software Packages. Contact: Chip Blois, George Washington University, Washington, D.C. 20052.

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VIEWPOINT

Connections



LOBBY
ON CONGRESS
Charles P. Lucht

There will be an increase in the "communications" problems that have plagued our computer industry since its beginning. These arise through the actions of one company to produce hardware and/or software that may be installed on the product of another without the latter's consent. Doing so can erupt in warfare between the companies involved, especially if the latter believes its patent or copyrights have been violated.

In part, increases in these problems will quite naturally occur, as does the marketplace demand for computer systems of every conceivable size. In part, it will result from our inclinations to the increasing numbers of new systems products into networks to facilitate their usefulness. But the computer industry's merger with and entry into the communications world will be the major cause. Along with the benefits this may bring will be the latter's communications problems that historically have made our industry's pain by comparison.

Not that our's have been minuscule; and we must only remember the various suits and counter-suits arising because of intentional or accidental connections which tried the patience of the involved parties. For example, arguments over which company may create peripherals for another's systems or even write software have plagued our industry since its beginning. But our merger with the communications industry with whom we, as a group, also wrestled over the same issues, cannot help but exacerbate these problems.

The communications industry's long-standing

Lucht is chairman of Lucht Sciences, Inc., a New York-based think tank specializing in computer and communications technology.

tradition of fighting and winning those suits went unabated for almost seventy years so its former giant, AT&T, took on just about anyone daring to enter the communications business. From engaging over trivia like the "bank-a-phone" connection to issues of substance like whether operating a private mobile phone service should be allowed to connect to its network, AT&T joins our computer

The communications industry's tradition of fighting and winning those suits went unabated for almost seventy years as its former giant, AT&T, took on anyone daring to enter the business. AT&T joins our computer industry as a battle-scarred and dismembered veteran of the courts.

or industry as a battle-scarred and dismembered veteran of the courts. When push comes to shove in our continuing battle over which company may produce products to connect to another's, two years of experience in dealing with such problems should compound ours which, as I said earlier, aren't minuscule. To AT&T, "forget" never meant abroad; it meant everywhere else.

The smaller manufacturers of computer hardware and software systems alike will find it tough sledding for the remaining half of this decade in an environment which, by my reckoning, has at least two superpowers when previously there was but one. If the small firms are not adopted by one of these giants or bought outright, they will have to discover new methods of creating their products

and purveying those into, or alongside the ever-spreading networks of the superpower.

"Connections are everything," a wise businessman once said, and who are we to argue? However this will have more meaning than in our future computer industry, as its leaders busily create their massive integrated services digital networks through which the products and services of others may find life — along with their own, of course. "Without connections, you're nowhere," a New York cabbie recently told me. I think he meant that all the powers that computer systems may offer, and then some, will be disposed into telephone service, Munk or electricity. And, that the economies of scale we can expect from this could so lower the cost of computer systems power that new entrants into the computer business may vanish before they arrive unless they are well-connected.

It's inconceivable that anyone would want this to happen in view of our increasing dependence on high technology for survival. No matter how tempting the idea that the big computer might want it, I don't think this will prove to be the case. Economic history has shown that without the competitive struggle of our smaller industries the large ones stagnate or come under government control. British history highlights this principle.

These days, there is little time and even less patience with the idea that the creation of such all-encompassing facilities by private industry should be prevented. We just deregulated our entire communications industry and our computer industry was never regulated in the first place. Bringing the two together has provided us with an industry worth over \$200 billion — roughly twice the size of AT&T before it was broken up because it was too big. But the jury is still out debating who will dominate the newly combined industry; as for as I'm concerned, there is a chance that neither of its current leaders will ever be able to succeed — nor may anyone else for some time to come. Of course the mind boggles at the idea of AT&T merging with IBM or one buying the other, but we won't

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IBM software announcement: fuel for speculation



HUMAN CONNECTION
Jack Stone

Where are all those analysts now, those who predicted that IBM would never be a significant factor in the personal computer business because they can never get themselves organized to produce acceptable personal computer software? I suspect they are out of the country nurturing their bruised ego, now that IBM has announced its internally developed software to the micro market (CW, Oct. 1).

The announcement reveals much about IBM's direction — or at least it provides more fuel for speculation in this regard. Here are my wrings at guessing what IBM is up to now. Let's start with the issue of the strategy of "open architecture," that is, appointing independent software firms of the internal design detail of the personal computer so as to enable them to write applications programs for the micro operating environment.

IBM is not the kind of company to change its policies easily, so you can imagine the wringing of hands and the wrenching of souls that went on when the company decided on such heretical action. I suggest the reasons for this decision were

these: First, IBM saw that the limitations of the then current technology restricted not only the size of programs and data files to levels below those needed for a decent-size, but small business market, but more significantly, the ability to fully integrate such systems into comprehensive but unimposing configurations of micro, mini and mainframes for the large corporation market. Second, the internal struggles involved with trying to choose an operating system which was compatible with the major IBM product lines, yet was not too far away from the threat of the market at that time, namely CP/M, must have been legion.

Even more complex must have been the debates over what applications software to develop and the degree of their generality. It is no secret that IBM's software has traditionally been ponderous, which may be minimally acceptable if there are 16M bytes of random-access memory (RAM) for the tasks to wallow around in, but it's quite a different story if the task has a nose around the neck in the form of 64K bytes of RAM or 128K bytes of RAM at best.

So the product czar, I suggest, made the decision not to decide at all, but to bypass this development cycle, let the software entrepreneur in for the play, use a CP/M derivative as an operating system so as not to shock the pants off the current user base, sell machines like crazy by virtue of marketing prowess and relax until: a) the software circus settles down on the most practical general-purpose packages of application programs; and b) improve their software as it develops with the internal capabilities for microprocessor sharing, micro-mainframe links, local-area networks and all

the other good things that are important to a total systems approach — a basic IBM strategy.

Special advantages

This decision had several special advantages: 1) IBM gave 3,000-odd software competitors a multiplier hand, an action that would have to bring early criticism by the Department of Justice boys when and if it ever did announce internally developed software.

2) It bought time for IBM to study, reflect and determine just exactly what is the best hardware and software combination for the marketplace, one which is consistent and integrative into plans for the standard product line.

Well, the hardware showed up in the form of the IBM Personal Computer AT and the software specifications became clear: IBM look-alikes for Lotus Development Corp.'s 1-2-3, Ashton-Tate's Dbase II and III and Peachtree Software, Inc.'s Accounting Packages, but designed to accommodate IBM plans for future expansion, not possible with the independent packages. No doubt the first-generation releases of those packages will be higher priced than the competition, and a great loss for IBM whose share of the market will ultimately be only 75% of the software market instead of its hardware-controlled 90%.

So the personal computer independents have a new and formidable competitor, king of the castle, IBM. And not just the software types either. The personal computer clients may also join the worried generation of IBM risk-averse software manufacturers to restrict its operation to machines only of its manufacture.

Stone is an independent management consultant, educator and writer, specializing in CP, mainframe communications and personnel development, based in Washington, D.C.

VIEWPOINT

MERGE from page 57

even assign this the probability we might, say, to the merger of the USSR with the U.S.

But what to do to ensure the health of our smaller computer and communications companies as the larger ones weave their systems into ever larger networks isn't going to be an easy problem to solve. Governmental intervention the likes of which occurred in Europe isn't going

to provide the answer.

When the European Economic Community coerced IBM into providing advanced information on its new systems interfaces to drop its antitrust suit against the firm, it achieved for IBM what IBM itself could not, namely, destruction of the possibility of a homegrown alternative in computer systems. Pity the poor European engineer who may now envision as sitting at his desk awaiting the latest care

package from Armonk so he can get on with designing something.

Our computer industry has thrived on individual initiative and a willingness to try to compete no matter how great the odds against success may seem. Steven Jobs and his Apple Computer, Inc. provided us with a shining example of this and winning, too.

Irreversible odds

Wang Laboratories, Inc.,

Data General Corp., Digital Equipment Corp. and Prime Computer, Inc., to name but a few, rose to the occasion against incredible odds; the failure of such behemoths as General Electric Co. and RCA Corp. to create viable computer businesses during the same time period must have been nerve-racking. And Apple Computer, Inc.'s ingenuity as a late entrant into the computer systems marketplace cannot help but give IBM and AT&T cause to wish

Apollo hadn't tried — or to wish they could buy the firm.

As I see it, the forces that made events such as these possible betray a principle which has been operating in our computer industry since its beginning. While fiercely competitive, and not without all the champagne human frailty may provide, we somehow know that certain kinds of self-imposed restraints in our overzealous drive to win should be put in place before we killed anyone's incentive to try.

That AT&T of late suffered for its reluctance to allow others to connect their devices is plain enough evidence of the folly of practicing exclusionary tactics, not that these weren't needed in the early years of its formation. With the emergence of our new computer-cum-communications industry, we have little need to enforce such exclusionary practices.

We can only hope that its current leaders will not wait for governmental intervention to recognize this and will take adequate measures to ensure that our smaller industries are not inadvertently killed off. Providing a means by which this can happen in an open, competitive way will mean leaving the issue of connectability open to merit.

Industry standards

I don't think this will require self-adoption of the drastic measures forced upon IBM by the EEC. Nor do I think that doing this would be any healthier for our companies than I suspect it will be for those in Europe. What I do think is that getting together to create a set of industry standards, if only in the desktop/terminal area, would benefit everyone. In hardware, this needn't be more than a device controller standard — like the Small Computer Standard Interface — being prepared by a group of companies for consideration by Ansi or something like it.

In software, the choice of an association's standard interface for developers would go a long way toward ensuring their continued vitality.

In both cases, we needn't settle on just one; it's not knowing which ones or how many there may be that's cooling investor enthusiasm to finance our startup enterprises.

If such minimal standards at the terminal could be put into place, nothing of significance would be lost to the leaders of our new computer industry. For if their profitability materially depends on an avoidance of this when so much can be done in the massive systems to which these are to be connected and over which they have absolute control, they'll not succeed anyway.

Engineers have used the computer to automate every industry but their own.

Software engineers have developed the technology to automate the secretarial world, banking, printing, defense systems, manufacturing, communications...even the Stock Exchange. But here we sit in the dark ages in our own industry, still documenting with pencil and paper, still manually assembling, still groping with the ambiguities of translating the original ideas into written form.

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Effective management strategies key to quality



QUALITY
Wayne Smith

The Association of Computing Machinery has devoted its September issue of "Communications" to computing in space. There is an especially intriguing interview on the space shuttle primary computer system. The interview was conducted with several members of the software development team responsible for designing, building and maintaining the shuttle's primary avionics and software system. This is the software that actually flies the shuttle during ascent and reentry — or doesn't fly it, as the case has recently been.

At one point in the interview the team was asked whether the shuttle applications were written using data abstraction techniques. The answer was no. In fact, it was stated that it was unlikely that anything remotely close to modern data abstraction techniques would be found in the shuttle's computer systems. Most of the design dates back to the late '60s.

To them (and to Nasa), quality was reliability; reliability was confidence; and confidence was history.

and early '70s from the Apollo, Mercury and Gemini programs, together with software and hardware experience on more terrestrial flight control applications.

So, here we had the most advanced computer application in the world being implemented with old techniques, old hardware and old components. As you read the entire interview, you come away with a strong sense that these developers were clearly seasoned professionals, faced with innumerable trade-offs and enormous risks.

So why, in the face of the staggering proportions of the problem, did they choose to rely primarily on the techniques of the past. Upon reflection, the answer seems obvious: They had seen them work before, and they knew how to use them. To them (and to the National Aeronautics and Space Administration), quality was reliability, reliability was confidence, and confidence was history.

Given Nasa's position on this issue, then why should your MIT organization be any different? Why shouldn't your organization simply rely on the old methods of the past? This is an especially compelling question, when you realize that the newer techniques and their associated productivity and quality characteristics have so far eluded validation by a scientific method. The best the computing science community can do is provide highly intuitive arguments

based mostly on anecdotal evidence. Certainly not repeatable, certainly not scientific.

The answer to this important question lies, again, back in the shuttle program. In that situation, it is clearly granted that individual productivity tools and methods could have been utilized. A data dictionary tool here and a test coverage analyzer there could have been employed and possibly achieved a corresponding local productivity and quality boost. But, the key issue was that these tools were not part of the management and organizational process. They had not become an integral part of the established software development culture. The tools and tech-

niques existed, people knew about them, but they hadn't yet become part of the process and discipline of building systems.

Quality, then, is less a function of the sum of the quality characteristics of the set of individual techniques in your program and more a function of the management and organizational process that will manage those techniques and control their usage. To say it another way, the quality characteristics that will be inherent in your own data processing products are not so much a result of the quality characteristics of the individual techniques that were employed to produce those data processing products. Rather, they are a result of the

management strategies and organizational principles that properly allocate those techniques to the appropriate organizational entities and schedule and control their usage so that they are brought to bear on the right work products and at the right time. This is the essence of a true quality program.

IBM departments are official fan.

We all feel confident that the new tools on the horizon and in recent use today have a great deal of promise. Quantification of their characteristics is, of course, still sorely needed. More precise definition of the dimensions of the productivity and quality

See QUALITY page 30

*Mother of three.
PTA Secretary.
Saboteur.*

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Smith is vice-president, specializing in quality, at Applied Information Development, Inc. in Oak Brook, IL.

VIEWPOINT

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facture are required. We can look to the universities and research and development organizations to advance our knowledge in this area.

Moreover, newer tools, better methods, and the continuing refinement of the existing techniques will likely come from many fronts, but primarily from the relevant vendors specializing in software quality and productivity.

But, in the final analysis, your MIS department remains the critical link. We must, therefore, adopt new tools and techniques.

This is not to much to gain the quality benefits they will certainly ultimately provide, or even to refine the techniques themselves, but rather to begin to shape the much more important management methods and

organizational principles which represent our only hope of exploiting them fully in the future.

You and your MIS organizations are the only crucible in which the successful quality programs can be hoped to be forged.

Without you as the critical link, the industry will be doomed to a progression of highly advanced, state-of-the-art, extremely esoteric tools and methods that can only fail to live up to their potential.

Established management skill and background is required to integrate them properly into the highly complex, environmentally dependent and high-flux MIS organizations.

As we learned from the shuttle program — quality is reliability, reliability is confidence, confidence is history; but history is being made sure.



Kudos for quality assurance

In response to "Quality assurance needs support" [CW, Sept. 17], I think a more appropriate title for the article would have been "Quality assurance starts getting support," as evidenced by the phenomenal success of the Bay Area Quality Assurance Association and the growth of quality assurance as a function within the data processing industry.

The description you gave of the quality assurance job as mainly identifying poorly designed and coded software reinforces the negative im-

age of quality assurance [personnel] functioning merely as "quality control police." A more accurate description of the quality assurance function would be to say that quality assurance provides the data processing department with the tools, methodology, techniques and standards to build quality into software.

Shirley Bush
San Francisco

A challenge for Woolley

I challenge Louisiana First Assistant Secretary of State, J. Robert Woolley, to back up his statement that "In the past... state and federal courts have split on the issue of whether the package's license agreement constitutes a binding contractual arrangement with the purchaser," [CW, Sept. 10].

I make this challenge because, to the best of my knowledge, there are no reported cases, at either the state or federal level, where a judge has ruled that a "tear open" license agreement on a mass market computer program constitutes a binding contract.

I am so sure of my position that if Mr. Woolley can provide me with a citation of one federal case and one state case reported in any computer law journal or by West Publishing Co., I will contribute \$50 to his favorite charity.

L.J. Mathen
St. Louis

LETTER from page 50

produced all of these Anal standards and is working on 16 more. Among those under development is a standard for software unit testing that will be balloted during Nov. 1984.

At least two professional organizations are concerned with software engineering (the IEEE Computer Society and the Association for Computing Machinery) and both organizations are involved in standards development.

Software engineering has professional standards.

David Seligson
Golden Valley, Minn.

Computerworld welcomes letters from its readers. Preference will be given to brief, double-spaced letters of 150 words or less; they may be edited for the purpose of clarity and brevity.

Letters should be addressed to Editor, Computerworld, Box 800, 875 Commonwealth Road, Framingham, Mass. 01701.



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Although we'd all like our business problems to fit into neat little compartments, they never seem to want to go there. Take a simple general ledger variance in your New York office. For some strange reason, it connects to a large office supplies transaction in London, which really turns out to be an erroneous distribution of a capital equipment expenditure to Peoria through your accounts payable system.

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SOFTWARE & SERVICES

A DBMS checklist for manufacturing systems

By Anne Proia
Special to CW

Over a period of 10 years, manufacturing information systems have evolved to the point where it is now virtually impossible to implement the basic functions required without the use of a sophisticated data base management system (DBMS).

As a minimum requirement, a manufacturing information system is expected to provide a completely integrated set of production and inventory functions, handling everything from daily set-change material requirements planning (MRP) to the dispatching function on the shop floor. It is expected that all user departments will be able to access a single repository of man-

ufacturing data that is available 24 hours a day. The basic manufacturing functions of MRP require the complex searching and

MRP manufacturing functions require complex searching and summarization of vast amounts of data.

summarization of vast data amounts.

The functions of manufacturing information systems thus require that the following five components exist in a DBMS:

1. **Bill of material processor.** The most basic requirement of any MRP system is that it be able to describe the subassemblies or raw materials that go into making

a manufactured item. The DBMS must not only "explode" the subassemblies downward but must also give upward visibility to higher level items on which these subassemblies are used. This is called implication.

Chain-based DBMS implement this feature through complex chain structures relating the parent item to the component subassembly simultaneously in an upward and downward direction. This is termed a "many-to-many" relationship since a parent item can have many component subassemblies and may be used as a component subassembly on many other parent items.

In contrast, the relational DBMS handles this feature in a much simpler fashion. Two indices are built on component subassembly records — explosion and implication sequences.

The relational DBMS seems to perform better for on-line addition of bills of materials in manufacturing environments where

See MRP page 61

Anne Proia is a data base consultant with Comserv, Inc., a vendor of manufacturing software. She specializes in multiple data base systems.

Federal Express backs bold ad claims with DP

"When it absolutely, positively has to be there overnight," proclaims the ads for Federal Express Corp., the company that moves documents and packages overnight to any city in the U.S. and parts of Canada. This is a rather bold and daring claim when one considers all the possibilities for error or delay in a territory as large and as complex as the one that Federal Express handles. The logistics involved are overwhelming, the computer dependency — enormous. Yet, each day, Federal Express proves its claim.

To meet this daily challenge, Federal Express runs two IBM DB2 production systems. The first, referred to as "Comcoe," supports customer service functions and is used primarily for courier dispatch and for rating and supporting the service agents who inform customers where their packages are and what the rates should be. The other system is a commercial DB2 system supporting all other activities within the company, such as receivables, pay-

See EXPRESS page 64

Ada overcoming market obstacles



SOFTWARE
John Geller
CW Senior Editor

As the demure Augusta Ada, the Countess of Lovelock, finally came out from behind her veil:

It appears, in a sense, that she has. Her namesake, the high-level programming language embraced for all mission-critical applications by the Department of Defense, seems to be leaping the hurdles that impeded its entrance into the commercial market quite handsily of late. The major stumbling block, DOD validation of Ada compilers, has been hurdled by a growing number of companies in recent days. As an even larger pool of vendors, many of them awaiting DOD validation of their compilers, has made available a variety of programming aids and tool kits as an interim market strategy.

In the last few weeks alone, these pages have seen the introduction of two additional Telesoft, Inc. validated compilers for Motorola, Inc. 68000 microproces-

sors and the AT&T Unix operating system. In addition, Digital Equipment Corp. unveiled its own validated compiler for its VAX-11 processors; Data General Corp. announced a debugging tool that completed its DOD-defined Minimum Ada Programming Support Environment; Veridex Corp. introduced its Ada Development system for large-scale embedded systems; and Intermetrics, Inc. unwrapped its Byron/Ada PDL Toolkit.

It has become fashionable these days to lay the blame for the huge cost overruns and the procurement scandals that have afflicted that government sector. But when it comes to the birth and development of Ada, one must give credit where credit is due. Admitting to the huge maintenance and applications incompatibility problems it was facing, the DOD bit the bullet and took on the task of designing a programming language to meet its needs. Perhaps more important, the DOD implemented and stuck by its strict Ada certification procedures to ensure the development of a truly portable, standard language.

See ADA page 62

Stratus adopts Oracle's relational DBMS across entire system line

MARLBORO, Mass. — Stratus Computer, Inc. has announced the availability of Oracle Corp.'s Oracle relational data base management system (DBMS) across the entire line of its Stratus continuous processing systems.

According to a spokesman, the Oracle relational DBMS on Stratus computers appears to the user as a series of tables called relations. The user encounters no other data structures, and information is reported in a standard in a simple, easily learned format. Oracle also provides a nonprocedural relational query language, called SQL-Plus, based on IBM's SQL.

Supporting all user levels for interactive, transaction and batch processing, SQL-Plus is a query, data manipulation and definition and data control language. In addition, Oracle's application generator reportedly tailors screens for on-line data entry, query and update procedures without programming. The system's interactive report writer allows the output of any query to be automatically formatted into a report, the vendor said.

The integrated data dictionary can be accessed through all Oracle facilities. All Oracle applications devel-

See STRATUS page 64

Software International unwraps IDMS-based general ledger tool

ANDOVER, Mass. — Software International Corp. has announced that Collinet Software, Inc. IDMS-based version of its General Ledger & Financial Reporting system. The software runs on IBM mainframes under IBM's OS or DOS.

According to a spokesman, IDMS installations will be able to utilize ADP/On-Line, Collinet's application development language, to develop in-house programs. The tool can interface with the Software International system. In addition, IDMS utilities and report writers will be able to access data resident in the General Ledger & Financial Reporting system, accord-

ing to Software International.

The package includes on-line ledger inquiry at the summary or detail level, mass maintenance capabilities and an on-line recurring and standard journal entry facility. System security and audit control features are built in to ensure data integrity, the vendor said.

The price of the IDMS-based General Ledger & Financial Reporting system is \$100,000 for OS and \$85,000 for DOS.

More information on the system is available from Software International, which is located at One Technology Drive, Andover, Mass. 01810.

■ Cipherlink Corp. unwrapped its Any Data-bridge, facilitating data transfer between a variety of computers/64

■ Universal Software, Inc. announced its Universal-Link intermachine communications software/64

■ Data General Corp. unveiled an Ada debugging tool for its Eclipse/MV superminis/64

■ Management and Computer Services, Inc. enhanced its Pro-mace/CICS and Estimatec packages/66

■ Teledyne Brown Engineering Co. will distribute Telesort, Inc.'s Ada compiler for Apollo Computer, Inc. workstations/66

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SOFTWARE & SERVICES

Cipherlink introduces data bridge

LOS ANGELES — Cipherlink Corp. has announced the Any Databridge, which reportedly allows users to transfer data between applications and a variety of machine types.

According to a spokesman, the Any Databridge can transfer data stored in different programs on the same computer or between minicomputers, microcomputers and mainframes without relaying. The system uses the IBM Personal Computer XT as an intermediate computer with two data ports to computers requiring the link.

The Any Databridge reportedly does not modify either the source or the target program, but acts as a translator between the two. It emulates a human operator to extract data from one program, strip it from its format and enter the data into another program. The spokesman said the Databridge product can translate data between any applications on any system in any direction. Neither the sender nor the receiver of data needs to be concerned with file structures, disk formats or languages because Any-Databridge achieves compatibility on the applications level.

The Any Databridge is installed on a computer functioning as a front-end data processor and is positioned logically between two computers. A single computer functions as both source and target when the product is used to move data between two software packages stored on the same computer. A terminal port is required to make a connection to the system. Cipherlink offers the Any Interface Card to provide terminal ports where necessary.

The Any Databridge is priced at \$15,000, including training and installation. For further information, Cipherlink is located on the Eighth Floor, 2907 Wilshire Blvd., Los Angeles, Calif. 90010.

DG unveils Ada debugging tool

WESTBORO, Mass. — Data General Corp. has announced an interactive, source-level Ada language debugging tool for its Helix/MSX line.

With the addition of the Ada Development Environment (ADE) Source-Level Debugger, DG becomes the first vendor to offer a complete Minimum Ada Programming Support Environment tool for Ada, as defined by the Department of Defense. The debugger and associated DG tools are said to increase programmer productivity and minimize the costs associated with program development, testing and maintenance.

The ADE Source-Level Debugger is priced at \$7,000 for an initial license and \$5,000 for subsequent licenses. Availability is 90 days after receipt of order from the Technical Products Division of DG, 4400 Computer Drive, Westboro, Mass. 01580.

CPU, remote device link introduced

BROOKFIELD, Conn. — Universal Software, Inc. has announced Universal-Link, a communications software system that enables users to communicate between IBM mainframes and most types of remote computers.

According to a spokesman, Universal-Link operates under IBM's DOB/VSE and OS/VS operating systems and facilitates communications among mainframes, minicomputers, microcomputers, word processing equipment, point-of-sale terminals and other types of distributed equipment. It provides users with the capability to download and upload data between a central site and any number of remote terminals.

The spokesman said the product supports all binary synchronous and asynchronous terminals and can transmit data in Ascl or Ebclic mode across any number of communications lines, either switched or leased. Other features include automatic error recovery and restart, data compression capabilities, blocked transmission and hard-copy reporting of transmission activity.

Universal-Link is said to be useful in a distributed data processing environment where continuous mainframe access is not required and data transmission is generally of short duration. It includes autodial and autosave facilities, and is tailored by the user to automatically select the most cost-effective method of transmitting data to and from remote sites, the spokesman said.

The product is said to be a multitasking system that can support any number of communications lines concurrently. It supports a wide variety of terminals and equipment, including IBM's System/38 Datastreamer; System/34, 36, 38 and 6800; 4331; and Displaywriter systems. It supports all bi-synchronous terminals, such as IBM's 3780, 3780, 3741 and 3270, and it supports asynchronous transmission for the IBM Personal Computer and compatibles. Universal-Link is priced between \$5,000 and \$40,000, depending on user system configuration. Universal Software is located at Brookfield Office Park, Brookfield, Conn. 06804.

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SOFTWARE & SERVICES

Promacs/CICS, Estimacs enhanced

Datamacs, Tracmacs programs available for Burroughs systems

VALLEY Forge, Pa. — Management and Computer Services, Inc. has announced enhancements to its Promacs/CICS and Estimacs software products. The company has also announced that its Datamacs and Tracmacs programs are available for medium- and large-scale Burroughs Corp. systems.

Promacs/CICS application development system for IBM mainframes under IBM's OS and DOS has been extended by an on-line screen generator called Paintmacs, which reportedly enables users to define formats or maps with a screen painter. The enhanced Promacs/CICS program sells for \$24,000.

A financial analysis module, improved effort, hardware portfolio and maintenance modules have been added to Estimacs, a mainframe software development estimating system. Estimacs supports the IBM Personal Computer and Personal Computer XT and Apple Comput-

er Corp.'s Apple II+ and Apple IIe, according to the vendor.

The financial analysis module treats systems work as an investment and analyzes expected cash flows in the system life cycle, the vendor said. It is said to include many financial calculations. Estimacs sells for \$18,000 for the first copy.

The Burroughs medium-scale version of Datamacs test data generator, coupled with the Tracmacs program path and/or testing and debugging software system, is said to provide all of the capabilities and characteristics of the software as it is currently marketed to Sperry Corp. and Honeywell, Inc.

Price of the system is \$26,000.

More information is available from Management and Computer Services, located at Great Valley Corporate Center, Valley Forge, Pa. 19422.

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to meet the needs of a broad cross section of users. It's easy enough for first-time users—because commands are in plain English. And powerful enough for the most advanced DP specialist. ■ And I.E. also gives you higher levels of security than most other systems. ■ Only MSA gives you I.E. ■ It's a giant technological step into the future from the company that has quietly led the way in application software development. It will now be a part of all software MSA provides. The result of 3 1/2 years of intense research and development, it's the tool that has taken the concept of total "system integration" out of the realm of theory and into the realm of fact. ■ To find out more about I.E., contact Robert Carpenter at (404) 239-2000. ■ Management Science America, Inc., 3445 Peachtree Road, N.E., Atlanta, Georgia 30326. ■ I.E. from MSA. ■ It's one more way we're adding the genius to computers. ■ Today and tomorrow.

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Ada compiler to be bundled on Domain line

WASHINGTON, D.C. — Apollo Computer, Inc. and Teledyne Brown Engineering Co. have announced that, through a cooperative agreement, Teledyne Brown will distribute and support Telesoft, Inc.'s Ada compiler for Apollo's Domain workstation.

An Apollo spokesman said the agreement with Teledyne Brown and San Diego-based Telesoft provides the first such Ada implementation for the Chelmsford, Mass., computer manufacturer's high-performance workstations which are designed for the scientific and engineering markets.

Official Department of Defense validation of the Teledyne Brown/Telesoft Ada compiler is currently under way, Apollo said. Initial purchasers of the package will receive a subset compiler, with a full upgrade provided when the validation is received later this year, the firm said. The subset compiler is priced at \$5,200.

Apollo is located at 230 Billerica Road, Chelmsford, Mass. 01824. Teledyne Brown Engineering is located at Cummings Research Park, Huntsville, Ala. 35897.

SYSTEMS SOFTWARE

EURICON SYSTEMS, INC. VMEntry

Euricon Systems, Inc. has announced a software package said to enhance the security of IBM's VM/SP.

According to the vendor, VMEntry complements IBM's directory maintenance package and provides a user-controlled password security with on-line password change support. Audit trails of password change attempts are maintained as an additional measure of protection. According to the company, once a password is changed, it is maintained by a VMEntry utility program executed in conjunction with the standard VM/SP directory maintenance products and procedures.

A permanent license for VMEntry is \$7000/CFU, including the first year of maintenance and enhancements. A two-year lease-purchase plan, annual maintenance plan and multifacility discounts are available.

Euricon Systems, Suite 800, 1800 Wilson Blvd., Arlington, Va. 22206.

ROBERT ELLIS ASSOCIATES 7080 Simulator

Robert Ellis Associates has announced the 7080 Simulator, a software package that enables programs written in IBM 7080 code to run on any IBM 370-type system without an emulator.

According to a spokesman, the 7080 Simulator is a collection of PL/I modules that execute 7080 object code by simulating 7080 functions. The system's control cards reportedly relate internal file references to

Continued on page 98

The Newest HP 3000.

It's the new, low-cost Series 37 Office Computer—the ideal system for a branch office, department or small business. Because in this little box comes all the power of an HP 3000 computer.

On the one hand, the HP Series 37 Office Computer can handle your distributed data processing needs, such as data entry and retrieval, data base management, accounting, even batch processing.

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Center, the Series 37 integrates all your office information needs.

It provides a common interface for HP's Touchscreen Personal Computer and The Portable, as well as IBM PCs. Rather than just acting as "dumb" terminals, they can interact directly with the Office Computer, using simple personal computer commands.

You also get communications for electronic

mail, links to your mainframes and other HP 3000s. Word processing. Graphics. Business software for financial planning. And



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hundreds of off-the-shelf programs.

This gives your people the individual tools they need to improve productivity. And with links to a common data base, they can be sure that the data they're working with is accurate and up-to-date.

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All family members are fully compatible right up the line. So the software you run on the Series 37 Office Computer will run on all the other models. Without any conversion at all.

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support. That's no small compliment from our customers.

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In Europe, write Michael Zandwijken, Hewlett-Packard, Dept. 003205, P.O. Box 529, 1180 AM Amstelveen, The Netherlands.

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SOFTWARE & SERVICES

Continued from page 65

external IBM JCL data dictionary statements, indicate alteration switch settings, define optimization parameters and provide additional optional facilities. To the operating system as well as to the computer operator, the simulator appears as a normal job requiring no special services, according to the vendor.

The T080 Simulator is priced at \$125,000, the vendor said.

Robert Ellis Associates,

474 Hughes Road, King of Prussia, Pa. 19406.

BOOLE & BABARGE, INC. Screenform Version 4.0.1.

Boole & Babarge, Inc. has released Version 4.0.1 of Screenform, an on-line tool for creating and maintaining IBM TSO, CICS and Information Management System screen formats.

The enhancements add IBM MV/3A Interactive System Productivity Facility

support, field-level definition, on-line macro and copylib generation and a generalized application interface. Boole & Babarge said. The enhanced field-level definitions reportedly eliminate the need for supplemental formats used by prior versions of the product.

Screenform's I/O area generation has also been enhanced for PL/I and Cobol programs and now allows user specifications of group and full-level numbers, ac-

cording to the vendor.

Screenform is priced at \$4,000 for a perpetual license.

Boole & Babarge, 510 Oakwood Plaza, Sunnyvale, Calif. 94089.

SCA PRODUCTS & SERVICES, INC. Data Manager

SCA Products & Services, Inc. has introduced Data Manager, an enhancement to SCA's Gateway Integrated

operating environment that runs under IBM's VM/SE operating system.

Data Manager provides interactive screens for entering budgets, plans, schedules, forecasts and other business information to the vendor. A user reportedly can define fields in response to prompts, enter data and change or update files at any time in conjunction with Gateway. Data Manager allows a user to create his own graphics and reporting applications that can use personal or corporate data bases, SCA said.

Data Manager is included in the cost of Gateway, which is priced at \$43,100.

SCA Products & Services, 553 Lexington Ave., New York, N.Y. 10016.

B I MOYLE ASSOCIATES, INC. Blamwindow

B I Moyle Associates, Inc. (IBM) has announced Blamwindow, said to provide windowing capability to users of IBM mainframes under IBM's DOS/VSE operating system with Viam.

Blamwindow is said to allow IBM 3270 terminals to switch back and forth between multiple Viam application sessions, with up to four concurrent sessions active. Typical uses of Blamwindow include logging on to a Viam application for testing while reviewing the source code for a program being tested on another Viam-connected application or using several system monitoring facilities concurrently.

A permanent license for Blamwindow is \$2,400.

B I Moyle Associates, 5785 Lincoln Drive, Minneapolis, Minn. 55436.

SOFTWARE CORP. OF AMERICA

Changetracker; Data Check Recovery Version 3.0; Fastload Version 8.1

"An automatic change tracking system and updates of two utility software packages have been announced by Software Corp. of America.

Changetracker is designed for load modules and supports IBM's OS. According to the company, the Changetracker records date, time, job name/user identification and other statistics, including an optional narrative describing the reason for the change. A query/display facility provides management with an historical perspective for solving change-related problems. The Changetracker is being offered at an introductory price of \$6,500, the vendor said.

Version 2.0 of Data Check Recovery incorporates new scanning and reporting features, including Scanlog, which eliminates performance degradation caused by

Continued on page 70

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SOFTWARE & SERVICES

Continued from page 68

soft failure; a NoFix data checking option that allows the user to determine how a data check problem should be resolved; and a Skip Displacement Report that monitors a volume condition, according to the vendor. Site licenses for the software is \$5,900, or \$3,560 for a single CPU.

Vsam reporting and dual-density volume support are among the additions to Fastdase, a reorganization tool that recomputes placing frequently accessed files close together. It supports all IBM OS systems and IBM 3350, 3360 and 3380 disk drives and plug-compatible devices.

Cost of the software is \$4,500 for one CPU and \$11,000 for two CPUs. A site license for three or more CPUs is \$15,000.

Software Corp. of America, 455 Carlisle Drive, Herndon, Va., #2070.

DESIGN STRATEGY CORP.
Vsam Analyzer

Design Strategy Corp. has introduced Vsam Analyzer, a Vsam space analysis and performance tuning product for systems operating under IBM's DOB/VSE, VSE, OS/VS1, MVS and XA environments.

Among the Vsam analyzer's features are the capacity to show space utilization of each cluster and to determine where deficiencies lie. The product is also said to provide parameters for reorganization of Vsam clusters.

Another feature of the analyzer is the ability to create the job control language to redefine Vsam clusters.

Vsam Analyzer is priced at \$2,500 for IBM DOB; \$3,500 for IBM OS.

Design Strategy, 330 Madison Ave., New York, N.Y. 10017.

SOFTWARE PURSUITS, INC.
Spri

Software Pursuits, Inc. has introduced a printer spooling system for the IBM DOB/VSE operating system and the company's own MVT/VSE operating system.

Spri reportedly lets the user add space to spool queues while the spooler is active and permits sharing of spool queues between two or more CPUs.

Spri has its own command languages and processes all power commands. The system also offers backspace and forward-space reports by page number, line, number or character string, the company said. It also is said to print reports before the job ends and split large reports for printing based on form types, customer name, job name and job number.

Spri is available for \$300/mo or \$250/mo for a two-year lease. Software Pursuits, Suite 200, 444 Market St., San Francisco, Calif. #4111.

SAS INSTITUTE, INC.
Dittest procedure

SAS Institute, Inc. has introduced a procedure said to enhance the interactive capabilities of its SAS/IMS-DL/1 program by allowing SAS programmers and data base administrators to test data base calls in a full-screen, interactive mode.

The Dittest procedure is said to be a test facility similar to some IBM data base test utilities. Unlike those utilities, however, the procedure reportedly allows SAS users to test data base calls interactively. Users format a DL/1 call by filling in the fields on the Dittest screen and executing the call with a RUN command, the vendor said.

SAS/IMS-DL/1 software runs on IBM 370, 39 series and 4380 series, as well as compatible systems running under IBM's OS and DOB/VSE operating systems.

The Dittest procedure is available to SAS/IMS-DL/1 users at no additional fee.

SAS Institute, P.O. Box 8000, SAS Circle, Cary, N.C. #7511.

ADVANCED SYSTEMS
CONCEPTS, INC.
Abstract/38, Probe/38

Advanced Systems Concepts, Inc. has announced enhancements to its documentation software that run on the IBM System/38 under IBM's C/P 5.0 operating system.

Abstract/38 is said to deliver documentation in a user's applications systems in printed format, and Probe/38 allows on-line accessing of that information. Enhancements include the ability to print out the representation of a display file. The display file layout option presents an image similar to IBM's Screen Design Aid utility.

Individual RPG or Cobol source programs can also be analyzed with the enhanced releases. An exploded source listing has also been added to Abstract/38. Probe/38 enhancements include the ability to display all programs referencing any portion of the physical or logical data base.

The products are available for \$1,000 each or together for \$1,400. Current user upgrades are \$30.

Advanced Systems Concepts, Suite 3, 1350 Remington Road, Schaumburg, Ill. 60195.

ZINK & KATICH, INC.
Presto/38

Zink & Katich, Inc. has announced that its Presto file display utility for the IBM System/34 and System/36 has been expanded to support the IBM System/38.

Presto/38 reportedly allows CRT presentation of up to 256 character record segments for records as large as 4,076 bytes. It is also said to offer update, add and delete capabilities without stop work.

Its Interactive Debug Facility is said to allow programmers to view inside their programs to isolate problems.

Presto/38 is priced at \$575. Zink & Katich, 1853 Service Road, Lansing, Ill. 60435.

See ADS page 74

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from one type of word processor to another. And host-based SNA communication transfers data between host terminals, word processors and the PC networks.

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18 Albuquerque	16 Toronto
11 Boise	23 Vancouver
23 Calgary	30 Washington D.C.
18 Cleveland	26 Winnipeg
4 Detroit	
10 Harrisburg	NOVEMBER
23 Houston	4 Albany
16 Kansas City	1 Anaheim
4 Little Rock	8 Boston
18 Los Angeles	28 Buffalo
2 Louisville	7 Chicago
23 Milwaukee	20 Columbus, S.C.
19 Montreal	15 Dallas
18 Ottawa	14 Denver
17 Philadelphia	15 Hartford
16 Pittsburgh	6 New York City
4 Phoenix	29 Rochester
23 Richmond	8 Seattle
9 Salt Lake City	
4 San Jose	DECEMBER
25 St. Louis	6 Oklahoma City

**Computer
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GEORGIA STATE UNIVERSITY Spin-X

Georgia State University has announced a modification to the Sperry Corp. OS1100 operating system which allows Xerox Corp.'s 8700 and 9700 electronic printing systems to be channel-attached to Sperry 1100s. The Spin-X software is installed on the Sperry 1100 computers and requires no hardware modifications to the computers or printers. A one-time license for Spin-X costs \$7,000 for a first site installation. Maintenance and new-release software support are included for the first year.

Georgia State University, University Plaza, Atlanta, Ga. 30303.

PRODUCTIVITY AIDS

THE BRIDGE, INC. Keyline

The Bridge, Inc. has announced an on-line entry system that provides a direct link to the computer.

Keyline operates directly with IBM's Vsm and is said to eliminate slow response time at the terminal. Editing and logic functions reportedly can detect errors and prompt the operator for corrections.

The system also provides backup and recovery facilities to protect against data loss. Coding and compiling is not required.

Developed by Infotek Australia Pty. Ltd., Keyline's U.S. distribution rights had been given to The Bridge.

The product is priced at \$29,500 for the IBM DB6/VSE version and \$36,500 for the VSI and MVS version. Prices include two days of training, documentation and interactive facility, retrieval facility and logic facility options.

The Bridge, 190 California Drive, Millbrae, Calif. 94030.

BONKEYWELL, INC. Development Center

Honeywell, Inc. has announced the Development Center, a collection of software tools and services designed to improve data center productivity.

According to a spokesman, the Development Center is designed for its DPS 8 and DPS 86 computers operating under the Coss 8 operating system. Development Center products and services are divided into three categories which parallel the major areas of responsibility and activity in a data processing department: applications development, systems administration and operations support.

The applications development category includes tools to build Cobol-74 applications, tools for building transaction processing systems and a variety of general-purpose tools.

System administration offerings include tools for systems management and tools and services for analyzing and monitoring computer performance.

The spokesman said Honeywell marketing representatives will consult with customers on the selection of appropriate Development Center tools for particular tasks. The tools are priced separately and according to configuration.

Honeywell, P.O. Box 8000/A-79, Phoenix, Ariz. 85066.

SOFTWARE & SERVICES

HELP/36 SYSTEMS, INC. Print Coder

Help/36 Systems, Inc., a division of Advanced Circuits, Inc., has announced Print Coder, a design aid that gives IBM System/36 programmers a facility for creating print programs interactively.

According to a spokesman, Print Coder automatically writes the output source for each report or form as it is designed on the screen. The design aid works on new or old print programs, IBM's RPG output specifications or external print files, the vendor said.

Print Coder reportedly also provides complete documentation for each report, including information on who gets the report, when they receive it and where it is to be delivered. Various listings show report distribution by program name, location, department, individual and day of printing. Print Coder provides a library of all report programs, layouts and related information.

Print Coder is priced at \$985 per CPU.

Help/36 Systems, 15102 Minnetonka Industrial Road, Minnetonka, Minn. 55345.

SYNTACTICS CORP. Crystalseries

Syntactics Corp. introduced Crystalseries, a Unix-based document management system designed for the multiterminal market.

Crystalseries reportedly enables users of Unix-based microcomputers

and minicomputers to do word processing and generate business forms as well as perform related document management tasks. The initial release of Crystalseries will run on a variety of Unix-based systems, including those of AT&T, Allos Computer Systems, Inc. and Convergent Technologies, Inc. Crystalseries will also provide access to documents stored in the system, the firm said.

The software package is said to feature an object-based design, which reportedly allows users to modify and manipulate the object they are working on easily.

The system's document data base will support a range of document-handling facilities, including access to a relational data base management system and applications programs, the vendor said.

The initial release of the software is scheduled for the second quarter of 1985. It will be priced at \$2,500 for micro systems that support three to 16 users.

Syntactics, Suite 145, 3533 Bowers Ave., Santa Clara, Calif. 95051.

APPLICATION PACKAGES

MANUFACTURING MANAGEMENT SYSTEMS Job Chaining System

Manufacturing Management Systems has announced a "full-paging system" to identify at all bill of material.

Continued on page 76

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THE 10 MOST IMPORTANT QUESTIONS YOU SHOULD ASK YOUR SOFTWARE VENDOR

"Many questions you would ask prospective application software vendors don't differentiate one vendor from another. The similarities between suppliers are not what's important—it's the differences that count. Here are ten questions you should ask prospective application software vendors before making your selection."

—John C. Gable,
Vice President of
Corporate Systems and Technology
for American Software, Inc.

	AMERICAN SOFTWARE	OTHERS
1. Can the application software you are considering be easily delivered in a variety of data processing environments (operating system, teleprocessing monitor, and data base) to permit easy migration and allow system software environmental independence?	Yes	?
2. Can the application software be delivered for VSAM and all popular data base management systems, rather than being tied to the application vendor's data base system—one which could be outmoded by new data base products developed by another vendor in this rapidly-changing high-technology industry?	Yes	?
3. Is the application software implemented using a "native" or direct approach to the operating system, teleprocessing monitor, and data base manager, without the inefficiency associated with "bridges" or the vendor dependencies of a "black box" approach?	Yes	?
4. Is the application product coded in an efficient, widely-used, and industry-standard language such as COBOL, rather than a vendor-dependent language unknown to the general data processing community?	Yes	?
5. Can the application product be "tailored" or streamlined to meet the specific functional and operational needs of a company through purchase of a basic package and selected optional features, thereby avoiding delivery of useless code?	Yes	?
6. Does the vendor retain a source version of each customer's uniquely tailored application software for emergency backup, problem determination, and client assistance?	Yes	?
7. Does the vendor have a broad, completely integrated line of application software which can be demonstrated on a single system instead of merely described?	Yes	?
8. Have all of the vendor's products been integrated by design and developed by a single organization, thus eliminating the need for inefficient interfaces and unknown "black boxes" to tie together unrelated or acquired applications?	Yes	?
9. Does the vendor clearly demonstrate a full commitment to the complex business of application software, rather than offer an incidental addition to its main product line?	Yes	?
10. Has the vendor been in the application software business a minimum of ten years with a successful track record of sustained profits and a strong financial posture?	Yes	?

If the answers to these ten questions make a difference to you, then let us explain the other important differences—the functional differences. Not all solutions are alike!

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SOFTWARE & SERVICES

Continued from page 74

trial levels how each level is used to satisfy the end-level requirements. The Job Chaining System can run on any mainframe or minicomputer that supports ANSI Cobol-74.

The system provides visibility to sales order requirements, and an indexed bill of material relationships of the material resources (inventory, manufacturing and purchase orders) necessary to satisfy the end-level requirements. Full tracing capability allows for the identification of component requirements with their resource commitments and end-item identification of initiating requirements for all manufacturing and purchase orders, regardless of their level in the bill of material, according to the vendor.

The system uses information from any existing material requirements

planning system or it can be used by itself.

Price of the Job Chaining System is \$15,000.

Manufacturing Management Systems, P.O. Box 14484, Houston, Texas 77231.

CCC SOFTWARE C/ta/36

CCC Software has announced the Consolidated Financial Information System (C/ta/36) for IBM System/34 and 36 computers. The package, written in RPG-II, can be modified to provide customized financial reporting either by the customer or by a consultant of CCC Software's parent company, the Computer Consulting Center, Inc.

The package is geared to multinational, multicompany and multinational organizations and is menu-driven. A built-in report generator requires no compiling or debugging, the company said.

The price of C/ta/36 is \$10,000, according to the vendor.

CCC Software has also introduced a modifiable Distribution/Financial software program, written in RPG-III, for the IBM System/36.

The Distribution/Financial Package has four sections: order entry/invoicing, accounts receivable, accounts payable and general ledger, the vendor said.

Each system as a stand-alone product is priced at \$7,500. All four packages together are priced at \$25,000.

CCC Software, 575 Eighth Ave., New York, N.Y. 10018.

AXIS COMPUTER SYSTEMS, LTD.

AX/10M Finance; AX/10M-MRP shop floor control module

Two software products for manufacturing companies were released recently by Axis Computer Systems, Ltd.

The shop floor control module of AX/10M-MRP helps monitor the productivity of factories. The module offers information about where orders are and where they should be, highlighting bottlenecks and orders that are behind schedule.

AX/10M Finance provides executives with windows to other AX/10M software products. The product can be tailored to customers' requirements for financial statements. Both products are designed for the Prime Computer, Inc. Series 50 computers running under the Prime operating system. The packages are written in Cobol.

AX/10M Finance is available for \$25,000. Cost of the entire MRP package, including the shop floor control module, is \$70,000.

Axis Computer Systems, 730 Boston Post Road, Sudbury, Mass. 01776.

SYGEN, INC.

36/Accountant 36/Accountant

Sygen, Inc. has announced two financial accounting packages for companies with multiple financial locations and different management reporting needs.

The 36/Accountant is a fully integrated financial system designed for the IBM System/36. It allows accountants to modify reporting formats or data base definitions. The 36/Accountant lets the accounting manager

Continued on page 77

*** The Goal News ***

Goal Systems Announces EXPLORE/VM™

Comprehensive VM Monitor in A Single Package

EXPLORE/VM is a complete VM performance monitor that offers both real-time and batch reporting facilities in a single package. The real-time facilities are used for monitoring VM's performance on a short term basis while the batch facilities are used for monitoring long term trends.

EXPLORE/VM incorporates comprehensive monitoring that is definable. Exception handling tells you when an abnormal performance condition is caused. By definition, this means that the

performance rather than react to performance problems after they have become critical.

EXPLORE/VM provides additional facilities to aid in locating performance problems. These facilities include:

- Degradation analysis—tells the performance analyst where performance problems exist over both the short and long term.

- FLASHBACK—a complete facility that allows previously collected performance data to be displayed in real-time.

- AUTO command—a unique command that allows EXECs written in either the EXEC or REXX programming languages to be automatically executed.

also provided just in case you forget how a command is entered or what the command will do.

EXPLORE/VM's batch reports are produced using a simple yet powerful set of control statements. To produce batch reports, you simply format the history records in the log file and execute the batch reporting job. And you can produce different batch reports as much as you like since the history file is not destroyed.

The archiving facilities of EXPLORE/VM are also very basic. Complete archive facilities are provided so you can easily keep historical performance data for long term trend analysis.



Goal Systems

Goal Systems International, Inc.

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SOFTWARE & SERVICES

define data fields within the system's master files.

General ledger, financial statements, accounts payable and cash management application modules are currently available, ranging in price from \$3,750 to \$4,000 each; they can be purchased as one system for \$11,000.

The 38/Accountant package for the IBM System/38 is an expanded version of 38/Accountant. In addition to the modules for the 38/Accountant, the 38/Accountant offers purchase order, payroll, accounts receivable and fixed assets modules. The 38/Accountant as one system costs \$49,500; individual modules are priced from \$5,000 to \$15,000.

Synges, Suite 180, 3001 Academy Drive, Durham, N.C. 27707.

OUTLOOK SOFTWARE, INC.

Outlook/GL

Outlook Software, Inc. has announced a general ledger package written in RPG-III that incorporates its Outlook/38 financial modeling program. The Outlook/GL package runs on the IBM System/38 under IBM's CFP operating system.

The integration of the two packages allows the user to do financial modeling with general ledger data, according to the vendor. The software reportedly includes a report writer and allows consolidation and multiple company reporting from the same data base.

Other features include variable and/or recurring journal entries, automatic journal entry reversal, on-line selection and display of transaction data, automatic allocation formulas, standard or customized ratio calculations and preliminary period closes.

The Outlook/GL package license fee costs \$10,000.

Outlook Software, Suite 117, One Woodfield Lake, Schaumburg, Ill. 60195.

PRIME COMPUTER, INC.

Samme

Prime Computer, Inc. has announced a computer-aided design (CAD) system that tests the comfort, viewing parameters and movement of a person within an environment prior to the fabrication of a prototype model.

A Prime spokesman said the System for Aiding Man/Machine Interaction Evaluation (Samme) is an interactive three-dimensional CAD modeling system that can be used to build a simulated environment such as an automobile, cockpit or office. It includes a computerized human model with reach and sight capabilities that simulates a person's movements in the environment.

Virtually any size or shape person reportedly can be represented through specific di-

mensional changes or statistical profiles of population groups. Analytical facilities include the ability to "become" the model and observe the designed objects or environments with the model's "eyes." The user can also interactively test the model's reach capability to any point in the workspace and can analyze the fit of differently sized models into given spaces.

Samme consists of three

groups of independent modules sold as a package. The first contains the three-dimensional modeling functions, the second provides the model and its related analysis facilities and the third provides additional evaluation routines. It runs on all Prime 80 series 32-bit computers under the Prime operating system. It is priced between \$40,000 and \$50,000.

Prime Computer, Prime Park, Needham, Mass. 01950.

DATA GENERAL CORP.

OCA Emacs

Data General Corp. and OCA Networks, Inc. (OCA) of Cambridge, Mass., have announced that DG has been licensed to market OCA's text editing system, OCA Emacs, for use on DG's Reltape MV superminicomputers and Distributed Systems (DS) workstations running under DG's AOB/V8, MV/UX, which works in association with AOB/V8; and DG/UX operat-

ing systems. OCA Emacs is also available with DG's Common Lisp programming environment.

DG will provide customer support and training. Initial licenses for OCA Emacs on the Reltape MV superminicomputers is \$2,400, initial licenses for OCA Emacs on the DS workstations is \$475.

Data General, 4400 Computer Drive, Waltham, Mass. 01580.

See 70BLS page 80

SCIENCE/SCOPE

The first U.S. facility for making gallium arsenide solar cells on a standard production line is now under construction at Spectrolab, Inc., a Hughes Aircraft Company subsidiary. Gallium arsenide cells, which are now being made on a prototype line at Hughes Research Laboratories, will help satellites and spacecraft become more efficient in converting sunlight into electricity. Compared to conventional silicon cells, gallium arsenide cells generate up to 30% more power and operate at much higher temperatures. The first cells are expected to come off the production line in mid-1985. Full-scale mass production at rates to 15,000 cells per year is scheduled for January 1986.

A spacecraft orbiting Venus will be used to observe Halley's Comet during the comet's closest approach to the sun in early 1986. NASA's Pioneer Venus Orbiter will be reoriented next year to examine Halley between December 1985 and February 1986, when the comet and Venus will be on the far side of the sun from Earth. The Hughes-built spacecraft has been making radar maps and performing other scientific studies since arriving at the cloud-covered planet in 1978. In April the Orbiter, designed to operate just one year, proved it could conduct the Halley mission when it viewed Comet Encke for eight hours. During the test, the spacecraft's ultraviolet spectrometer surprisingly revealed that Encke is losing water through evaporation at a rate three times higher than expected, based on previous observations.

A new target cueing system makes shoulder-fired missiles more effective, allowing troops to fire at aircraft day or night or in bad weather. The prototype uses the Low Altitude Surveillance Radar (LASR), a recent Hughes development, and the Position Location Reporting System (PLRS), in production for the U.S. Army and Marine Corps. It enables a gunner to use the full capabilities of the missile and assists him in making the split-second decisions needed to engage fast, low-flying aircraft. LASR pinpoints incoming targets while PLRS provides the precise location of both the radar and the weapon. Small lights integrated into the missile launcher sight direct the gunner and tell him when the target is within launch range. Tests show that gunners can learn to operate the cueing portion of the system with only 20 seconds of practice.

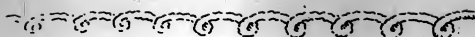
Paper-thin gallium arsenide solar cells have been fabricated using methods identical to those used for making conventional gallium arsenide cells. The new cells exhibit an efficiency of greater than 16%. A typical cell is approximately 70 micrometers thick and weighs 0.2 gram. The demonstration proves that Hughes research scientists can transfer experience, techniques, and processing steps for making conventional cells to the thin cell.

Hughes Ground Systems Group is preparing to apply its airspace management experience to the exciting challenges of worldwide air traffic control. These systems will be designed to ensure service 24 hours a day, 7 days a week. They will support distribution of processing among multiple computers linked via local area networks. The many challenges include design and development of hardware and software to support advanced display and man-machine interface technology, and using satellite technologies for future ATC applications. To help design the next generation of air traffic control systems, send your resume to Hughes Ground Systems Group, Employment Dept. S3, P.O. Box 4275, Fullerton, CA 92634. Equal opportunity employer. U.S. citizenship required.

For more information write to: P.O. Box 1000, Melrose, MA 02126

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SOFTWARE & SERVICES

TOOLS From page 77**COMPUTIME, INC.**
Pricing software

Computime, Inc. has introduced communications software for memory-based, retail point-of-sale and banking terminals.

The software, which operates on IBM mainframe computer systems running DOB/VSE and using synchronous and asynchronous communications protocols, is said to provide access to memory-based cash registers. Networks requiring two-way communications reportedly can select optional transmission features. A modular design allows the user to mix multiple device types.

The product license begins at \$48,000 and increases according to the modules selected.

Computime, River City Office Park, 401 N. 117th St., Omaha, Neb. 68154.

PRL ASSOCIATES, INC.
Inventory Management and Accounting Purchasing and Receiving Order Entry and Invoicing

PRL Associates, Inc. has introduced three distribution application software packages that operate on Tandem Computer, Inc.'s Nonstop superminicomputers.

The Inventory Management and Accounting, Purchasing and Receiving and Order Entry and Invoicing systems are said to use distributed data processing to provide immediate on-line access to data from all the user's sites. The packages include a security system, the vendor said.

With the Inventory Management and Accounting System, inventory operations from shipping to receiving are monitored. Each item and lot can be located by warehouse, area, aisle and bin; classified by product family, group and class; and assigned ownership by company, division and department, the vendor said.

The Purchasing and Receiving system provides on-line, multicompany, multi-division control and processing of purchasing and receiving functions, the vendor said. The package reportedly handles traveling requisitions and open and blanket purchase orders. It also consolidates multiple requisitions and purchase orders.

The Order Entry and Invoicing system provides on-line entry, editing and inquiry capabilities that reportedly enable the user to take orders over the phone and answer questions about orders, pricing, product information and account status.

The programs are priced at \$50,000 each for a perpetual license.

PRL Associates, 10 Cottage Ave., Point Richmond, Calif. 94801.

CAMBAR BUSINESS SYSTEMS
Control System

Cambar Business Systems has introduced an enhancement to its order entry software designed for companies doing telemarketing.

The Control System telemarketing process allows on-line inquiry into a variety of

sales options via a CRT, the vendor said. With the program, a user can learn the availability of inventory in different company locations and the quantity break prices for merchandise.

The Control System package runs on IBM's 4300 series mainframe hardware. Available modules include order entry, accounts receivable and inventory control. The program is priced at \$150,000.

Cambar Business Systems,

P.O. Box 10087, 2884 Auden Drive, Charleston, S.C. 29411.

DATAPLOTTING SERVICES, INC.
D-Pict

Dataplotting Services, Inc. has announced the conversion of its D-Pict graphics software products line for all Data General Corp.'s MV series superminicomputers.

D-Pict products include D-Pict/B, a business graphics

package; D-Pict/VGL, a library of subroutines and utilities for graphics applications; and D-Pict/Graphkit, a library of callable subroutines.

Prices for D-Pict products range from \$4,000 to \$18,500, depending on the product desired and MV series superminicomputer model used.

Dataplotting Services, 225 Duncom Mill Road, Dow Mills, Ont., Canada M3S 3K9.



INTRODUCING DECmate III.

SOFTWARE & SERVICES

MRP

from page 63

explosion or implosion chains are long.

3. **Material requirements planning.** MRP offers the ability to improve inventory turns dramatically while still maintaining valid shop floor priorities. This is accomplished by keeping an up-to-date material plan that will bring inventory in the door in time to build products.

DBMS supports this process by exploding bills of ma-

terial to calculate the exact amount of inventory necessary to build manufactured items. The details of inventory requirements are maintained in an order data base, and adjustments are continually made as conditions change.

A DBMS must be able to sequence and update the same data efficiently by several different keys. It must also be capable of processing vast amounts of data quickly. One of the major considerations

in the selection of a manufacturing DBMS is the ability to make MRP run in an acceptable amount of time.

3. **Shop floor control.** Real-time transaction reporting that keeps the data base current is often necessary to support immediate decision-making regarding material shortages, machine outages and product defect minimization. It is also essential that a company be able to gather labor and scrap data to know exactly where everything is

at any given moment.

A DBMS must provide high-volume update capability around the clock to support a three-shift manufacturing operation. Shop floor functions must often continue to operate even while massive amounts of data are being updated by MRP.

4. **Master scheduling and capacity planning.** Getting the right materials to the factory at the right time is a pointless exercise if you are building the wrong products

or you do not have enough shop floor capacity to produce the material. Scheduling techniques are used to model the building schedule and the ability to build. A central repository of manufacturing data must be available to these simulation programs in parallel to day-to-day manufacturing activities. A DBMS must provide the capability to maintain an on-line update of data while many batch programs concurrently read or update the same data.

5. **Cost management.** Standard costs must be calculated from the cost of subassemblies through the bill of material and the routing data bases. Actual costs are collected from the shop floor.

Costs can only be managed when management is allowed to play complex "what-if" games against this data. The most relevant decision tools take existing cost trends and project them into the future based on the material plan created by MRP.

When powerful ad hoc query tools can be applied in a real-time mode to the data base, pricing and production decisions can be made in a highly reactive fashion. The most powerful on-line reporting tools are associated with relational DBMS.

Extensive searching against chain-based DBMS systems is usually relegated to batch processing due to the relative inefficiency of searching against keys not previously defined. It is usually more expedient to create a batch copy of the data in a different sequence, such as a Q-file, than it is to make structural changes to the way data is stored.

In addition to supporting basic manufacturing functions, a DBMS must allow manufacturing data to be used by all other corporate functions. For example, sales order entry and demand forecasting must feed into the master scheduling function.

Two very important requirements for the DBMS surface in light of these interfaces.

It is very difficult to predict initially all the ways manufacturing data must be interfaced to other systems. The most reliable method of ensuring smooth future interfacing is to select a DBMS that facilitates easy changes to the way data is stored and structured. The relational DBMS excel in this area.

When manufacturing systems are fully in place and integrated, a tremendous amount of data is being maintained. Efficient methods of summarizing data to do unforeseen processing or reporting are essential, since unloading or restructuring varying amounts of data becomes increasingly less practical. Again, the most efficient, large-volume, ad hoc query functions are done under the relational DBMS.

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At just \$2895* the new DECmate II™ word processing system does the DECmate tradition proud. It's powerful, diversified, and complete. Moreover, it features an enhanced version of the software that has made DECmate a household word around the office.

With the new DECmate II you can cut and paste by the column, generate scientific and technical documents. Search for words automatically. With one of the nimblest cursors in the business, you can move through text by the character, paragraph or page.

The DECmate II will help you generate lists, sort alphabetically, and make sure everything adds up. If English isn't your native language, the new DECmate II

speaks four others: French, Italian, German and Spanish.

And while the new DECmate is designed to stand on its own, it won't leave you talking to yourself. It communicates immediately with other DECmate family members. In terminal mode, it can work with office automation software like Digital's VAX™-based ALL-IN-1™. It can communicate with remote systems around the corner, or around the continent.

The new DECmate II word processor complements the DECmate II™ office workstation by affording you low-cost entry into professional word processing. While it does not offer all of DECmate II's expansion options like a hard disk, it will grow just like your need for automation will.

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with 70,000 words** of its own. Measure one of them and the system will get you quickly back into spelling bee shape.

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ADA from page 63

The above firms and a handful of others have braved DOD's rigorous testing and have neatly positioned themselves to reap the benefits of supplying Ada programs and products to both defense and commercial markets. It is clear that any company intending to target its products to the DOD had

better get on the Ada bandwagon if it is to survive as a supplier in the next decade. But what about the commercial market?

It would not take the special talents of a psychic to predict that Ada will somehow make its way into mainstream data processing. The software problems the DOD faced are certainly not unique to

that environment—clearly most large-scale software development organizations could benefit greatly by adopting the powerful, versatile language.

Leaders say Ada will make its first forays into the commercial sector in companies that develop software for both military and civilian markets. With a growing number of products becoming available, such as those already mentioned, more and more companies will begin to realize the advantages to be gained by exploiting the fruits of the DOD's labors.

The question is when. Most DP and MIS managers have become accustomed to looking to established hardware and software vendors for the promised "solution" to their problems. In the software realm at least, the powers that be have been notably silent on Ada. That is probably because they have a vested interest in older languages like Cobol. Thus, it is unlikely that the established software vendors will be offering much in the way of Ada support for some time to come.

That presents a unique opportunity to the forerunners who gambled on Ada. Should the big software firms decide to venture into Ada waters, the Ada pioneers will still maintain a considerable head start owing to the long DOD certification process that all potential vendors must endure. That head start gives the current Ada product vendors a chance to exploit whatever market currently exists. It also makes these vendors attractive partners for companies that would like to reap Ada profits without committing to the R&D and validation rigors required to bring products into the market. That is already happening. A case in point is Telesat's recently penned multimillion-dollar contract with IBM.

For the short term, however, foresighted DP and MIS professionals who wish to experiment with Ada in their shops will, for the most part, have to look to the pioneers. But those professionals, who are charged with the somewhat responsibility of evaluating and adopting relevant new technologies to meet their organizations' information needs, should not despair that the established vendors are not yet offering any Ada-based solutions. Even the big guys were pioneers once.

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COMPUWARE



SOFTWARE & SERVICES

EXPRESS from page 63

bles, personnel, flight operations and crew scheduling. The commercial DMS system runs on an IBM 3084 Model Q64 and supports approximately 2,000 terminals. Comes runs on a 32M-byte IBM 3081 mainframe that supports an additional 1,000 terminals.

To ensure efficient performance of this complex system, Federal Express maintains Candle Corp.'s Omegason/DMS, a proprietary software system that provides a window into DMS activity on a real-time basis and automatically detects and warns of DMS availability and performance problems. The kind of information that Omegason/DMS provides is vital to the company, said Eddie Freeman, project manager at Federal Express. "We are a fairly young company, and

we are almost totally dependent on our computer systems. When our systems are down, the company is in trouble. We have a 99% system availability goal that we hit regularly. Meeting that goal is vitally important to Federal Express," he said.

However, maintaining a 99% availability level is not accomplished without some problems along the way. For example, during the week of implementation, when Federal Express converted to DMS from IBM's Airline Control Program, Omegason/DMS was used primarily for direct-access storage device (Dasd) placement to determine what percentage of time the devices were busy.

Transaction volume was another important factor. Using Omegason/DMS, "we could tell by the [relative byte address] that was shown on the screen where problems were occur-

ring [and] whether they were data base- or application-related," said Don Liedtke, consultant to the data base administration group.

"Being familiar with both of them, he continued, "we could then isolate the problems and solve them more quickly."

One of the difficulties Federal Express faced involved Dasd placement problems such as data set placements that were overworked and overloaded. Some of the transactions were performing poorly, indicating that the data set placement on particular data pages was incorrect. On the basis of information obtained through Omegason/DMS, the placements were changed immediately.

Another feature of Omegason/DMS is its ability to zero in on specific problems as they occur, rather than relying on information that may be

as much as two days old before it is reviewed. Liedtke said, "In the DMS system, the log tapes are not the handiest things to use, but we were able to react on the fly with Omegason/DMS. That's a great benefit. I would say the commercial area of Federal Express is operating much more effectively and efficiently as a result of putting in a real-time monitor. Omegason/DMS has shown us many problems that we previously glossed over or misunderstood."

Not only did Omegason/DMS help solve various problems, it also improved the learning curve for those involved in its use at Federal Express. Freeman said, "One of the ways that Omegason/DMS helped was by letting us see the effects of a change immediately. As soon as the system is started up, we notice a difference in activity or related functions." Perhaps the area that has been helped the most is isolation of program problems. Omegason/DMS lets the programmer see what is causing a problem and whom it is affecting, and it helps determine which terminal is being locked out, according to Freeman. These are the kinds of observations that are difficult to make using traces or similar methods.

Productivity benefits

Freeman also found that Omegason/DMS provided a quick and easy method to obtain needed information, a factor resulting in productivity benefits. "The exceptions are highlighted on the screen, and they jump out at you," he said. "This is a particularly important feature when you're waiting on [save area prefixes]. Now it's easier to see conditions that pass quickly. Previously, they went unnoticed."

As a result of gaining this kind of information so readily, additional time has been freed. Freeman described a situation in which one of the senior systems programmers had more time because he no longer had to compile reports about system activity or formulate tuning reports and search through traces. These functions could be accomplished by using Omegason/DMS to take a "snapshot" of the system. Freeman said, "I believe that Omegason/DMS has brought back about 50% of the senior systems programmers' day."

In the areas of problem resolution, education and productivity, the Candle product has provided enormous benefits for Federal Express. Liedtke said, "Using Omegason/DMS has allowed us to use our time more efficiently. We've been able to identify problems and learn from our experiences. The information we gain increases our learning curves for educating other data base administrators or technical support people, even the application groups. Everyone can understand what's happening more rapidly. We all agree that it has increased productivity significantly."

IS YOUR VAX TERMINALLY BOGGED DOWN?



XYPLEX

STRATUS from page 63

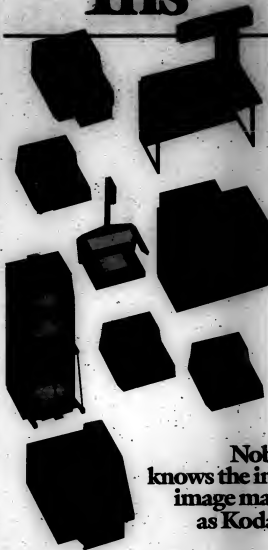
oped in standard programming languages on other systems reportedly can be converted for use on Stratus fault-tolerant systems.

The Stratus Oracle relational DBMS is scheduled for shipment in the first quarter of 1985 at a price of \$30,000.

Stratus is located at 55 Fairbanks Blvd., Marlboro, Mass. 01752.

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IBM user groups

Mention Guide and Share to any IBM mainframe customer and chances are he will know exactly what you are talking about. For nearly 30 years, the two organizations have served as a forum for IBM mainframe users to learn, analyze and complain about IBM. The domestic and international arms of the two user groups constitute a powerful union that influences IBM as well as the entire computing community.

In a sense, Guide and Share chronicle the history of modern computing. Both groups were formed in the mid-1950s, when a handful of computer pioneers gathered to discuss the then-experimental use of computer systems. Share was born in 1955 with 17 member installations; Guide was formed a year later with 44 installations.

Today, Share boasts 1,987 domestic members and Guide, 2,600. Many installations belong to both groups, yet rarely does the same company representative become actively involved in both.

The structure and organization of Guide and Share parallel the maturation of the computer industry in some respects. Share emerged as a consortium of scientific computer users. The bulk of its 17 original member installations were users of IBM's 701 processor. In contrast, Guide was founded by commercial users of IBM's 702 and 705 processors. Today, remnants of those scientific vs. commercial charters still exist, but the two organizations' functions overlap as much as they complement each other.

From organizational and operational standpoints, the two groups are

almost identical. In fact, Guide and Share have, on occasion, discussed the possibility of merging. The membership of each group voted against those proposals.

Membership requirements are almost identical. Guide's members must operate an IBM 4300 series or larger processor. Share is slightly more specific. It requires members to have at least a 4361 Model 4.

Users of smaller IBM systems form a group similar to Guide and Share called Common. Traditionally, Guide and Share have had little to do with Common. But largely because distinctions between processor classes are increasingly blurred, that tradition is changing. Guide recently began to exchange more information with Common, and Share is watching that experiment, perhaps considering a

John Nack
Guide International Corp.



We have a lot of people who are interested in coming to Guide and taking an active role, but we are having trouble back at the shop convincing the boss that there is a real benefit.

Interviews with the presidents of Guide and Share

similar relationship with Common.

Tom Henkel, *Computerworld's* senior editor, systems, recently interviewed the presidents of Guide and Share. Like their groups, John Nack and Bill Butterfield have much in common, ranging from similar career paths to their views on IBM.

Nack is midway in a two-year term as president of Guide. He also manages the Processing Network Division of Caterpillar Tractor in Peoria, Ill.

Nack chuckles when he recalls that the now-mammoth Caterpillar data processing operation did not even exist when he started working for the company 32 years ago. He became involved in DP almost on a whim. Caterpillar was sending volunteer employees to IBM training classes. Nack volunteered.

After years of involvement with

Guide, Nack moved into the president's seat at a time when Caterpillar was suffering severe financial problems. Nack admits that his request for time away from his duties at Caterpillar was met with some raised eyebrows, but he won corporate support nonetheless.

Butterfield officially finished his two-year term as Share president about one week prior to his interview with *Computerworld*. Former presidents of Share, like Guide, move from president to a two-year stint as past-president.

Now in his 20th year with General Motors Corp., Butterfield works in a suburban Detroit research facility. He now focuses on shaping GM's involvement with computer-aided design and manufacturing. When elected president of Share, Butterfield worked in

GM's research laboratory. And, like Nack, Butterfield became president of the user group at a time when GM suffered declining revenues.

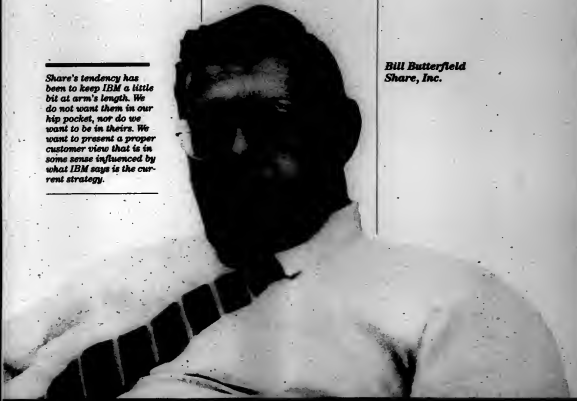
"Research Labs was, to some extent, insulated from the hard economic times. They saw the benefits [of the Share presidency] outweighing the negatives when they made the commitment," Butterfield said.

When it comes to IBM, Nack and Butterfield have grown to realize that influencing the corporation's policies is neither an overnight process nor a sure thing. They made it clear that the only way to change the collective minds of IBM management is to leave emotion behind and present a strong business case.

Nack's interview begins on ID/4, Butterfield's on ID/8.

Share's tendency has been to keep IBM a little bit at arm's length. We do not want them in our hip pocket, nor do we want to be in theirs. We want to present a proper customer view that is in some sense influenced by what IBM says is the current strategy.

Bill Butterfield
Share, Inc.



IN DEPTH/NACK INTERVIEW

An interview: John Nack



What is the principal focus of Guide? Is it a large voice used to influence IBM, or is it an educational organization formed primarily to share experience?

Over the past 27 years there has been a need for users of IBM equipment to exchange experiences, to learn from one another. I think that is one of the biggest purposes we serve; we are a forum to exchange information and interact with one another. A part of that is that when a significant number of people become concerned about one thing, then obviously they'd like to bring IBM's attention to it. We attempt to influence IBM; there is no doubt about that. But that is not all that Guide does.

We study new products and tell IBM their shortcomings. We study old products and describe their shortcomings. We exact a set of requirements and expect them to react. We say: "Here is the formalized set of requirements related to this product, and we expect that you will look at our requirements, attempt to understand them and fix those you believe are worth fixing."

In all instances, there has to be some sort of business case built from their point of view. But if you take Guide, Share, the European Guide, European Share and the Australian Guide, we have five organizations where, if we get them all together and focus on a subject, we represent a significant amount of IBM's customer base.

Does Guide function independently of IBM?

We have IBM speakers, but we also have non-IBM speakers. We have IBM involvement, but we are a separate, independent company.

Do companies with a Guide membership get any special treatment from IBM, such as advance notice of product announcements?

I don't think so. We don't get any free announcement material, any more than I get as a large customer. IBM is very careful about press announcements. They have been for years. Statements of general architectural direction, and that sort of

thing, we usually receive about six to eight weeks after the trade press publishes them.

Is there a set of rules governing how Guide deals with IBM?

No, I wouldn't say there is a set of rules. There is a certain technique, I guess you could say, we have managed to polish up over the years. We keep a set of requirements, problems or ideas generated on the project level that address a specific product. We keep those in a particular format. We tend to use a similar format in almost any dealings with IBM: state the problem, what we think ought to be done and why we believe IBM would benefit by fixing it. We attempt to make a business case.

Do representatives from all five

user groups get together to talk about their current problems and concerns?

Yes, there is an international meeting. The five presidents from the five organizations meet on an annual basis. There is not as much interchange at the project level, as much face-to-face meeting, as might be expected. International travel gets to be very time consuming and expensive. There is a significant amount of exchange of written material.

Being president of Guide obviously requires you to spend a fair amount of time away from your job at Caterpillar. Has that been a problem?

It does not take a significant

amount of time out of my day-to-day job because I just don't let it. I do most of my Guide work at home, at night. It does require more travel than I would have otherwise have to do. As a result, I am absent from the workplace more often.

How much time does heavy involvement in Guide take away from the participant's regular job?

I don't think there is any way to put a percentage on it. I believe if you're investing more than 25% of your normal total working time in an outside function, you are probably jeopardizing your employment. What I believe you should do is try to do 100% of your regular job and take 25% of your own time.

The commitment we ask for is to be active for two full years. We meet

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IN DEPTH/NACK INTERVIEW

three times a year now, for a week each time. So for people who want to be active at the project level, we are asking them to take six weeks out of the following two years to come to Guide. That gives some people trouble.

Does that cause a problem in getting good people to sit on Guide committees?

Yes, it does. If you are having constant turnover, you're not making as much progress as you should be making. People who appear for the first time [in committee meetings] have to catch up with what has happened at the past three meetings. It gets to be a time-consuming job.

Guide is made up of many diverse IBM users. Some Guide at-

If we feel an IBM presentation is a sales pitch, we tell IBM we don't want that again. After all, this is an IBM user group. Why should anyone be selling IBM to an IBM user group?

tendees come from very large, sophisticated DP shops. Others come from small, un-sophisticated shops. How does Guide manage to provide useful information to such a broad range of IBM users?

That is one of the challenges of this type of organization. On occasion, we have evaluated the idea of categorizing ourselves into large and small users. But there are a number of ideas that aren't sensitive to size. Security and the acquisition, retention

and training of good people are not size-sensitive issues. Fine because, or it seems to become, more sensitive as you get into the hardware and software issues. And the way we tend to address those issues is to have projects that spring up to address a specific product (hardware or software). This approach tends to attract the people who are large enough, or small enough, to use that particular product. It fixes itself. I believe we have to consciously avoid gaps in the overall coverage. I

don't believe we should abandon the small user just because he's a small user. On the other hand, I don't think there is any reason to limit, nurture and feed 1401 programming. There has to be some interest in a subject does it?

We started out with 44 members, and now we're at 2,600. I can see how some people can get lost. When I first went, I was lost. I went because I had some people who'd been going for some time, and they were telling me what a wonderful organization it was.

For the first two meetings, I was significantly at sea. I was one of those people who said, "Guide ought to be broken in two — big guys on one side and little guys on the other." The more I was around, the more I discovered that I had more in common with the little guys than I did with some of the big guys.

Organizations built around a specific focus or issue tend to become cliques. Is that a problem within Guide, and how do you handle it?

I don't really sense it is a problem. I think it is really the individual that makes the contact and develops the ongoing interest in the organization. Guide is a user-driven organization. We do not start a project unless enough people want to know about it. In fact, we've had experiences where the board of directors has thought something would be a real burning issue and we haven't been able to find anyone who agreed.

What do you find are the most pressing issues from the user's standpoint?

We tend to keep a list of what we call our major concerns. The issue of continuous systems operation has been among those concerns for the past few years. I think there is new interest coming forth in security and relational data bases. There is obviously some smaller subset of our organization that is interested in what IBM will do on the low end; what are others interested in what IBM will do on the high end. I expect we will develop some projects on IBM's new (3480) tape subsystem. I would imagine that some of the membership will come forward and say, "We've got to know more about the Personal Computer AT."

Do you try to coordinate Guide presentations with IBM product announcements? For example, do you try to get someone from IBM to explain the major announcements over the past few months?

We do that at the project level. There is a basic education we ask IBM to offer. And we seek some directional information. For example, we'll ask IBM, "What do you think this means, and how do you think we'll handle libraries?" That sort of stuff.

How do you avoid getting sales pitches from IBM?

If we feel an IBM presentation is a sales pitch, we tell IBM we don't want that again. Basically, we'll try and keep that IBM presenter from coming back to Guide, or we'll make sure that we don't invite anyone from that particular group without

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IN DEPTH/NACK INTERVIEW

We're not attempting to provide a marketing opportunity for anybody. The requirement for membership is that you have \$300 or larger equipment. If a consultant's firm has that kind of equipment, I don't see why we should try to keep him out.

making it very clear that we're not interested in sales pitches. After all, this is an IBM user group. Why should we be selling IBM to an IBM user group?

IBM is announcing products much more frequently than, for example, the IBM 370 days when the company appeared to be on a five-year announcement schedule. In keeping up with these rapid-fire product announcements a problem for

users?

Of course, it is making it more difficult to keep up. We suffer from the same, or a similar problem, as IBM. We're only capable of assimilating so much information. And IBM is only capable of disseminating so much information. With the IBM product cycle getting shorter, we're finding that we have to talk to individuals within IBM if we want to get into any depth on a product.

Have IBM's accelerated product announcements changed the type of information Guide provides?

No, I don't think it has yet. There is the potential that it could, because by the time we study a product there may be a new product in the offing. We typically take a year — maybe two years — to do an in-depth analysis of what we think is wrong with a new IBM product. We then go to IBM and say, "Here is our set of requirements." If IBM's product cycle is two years, it is hardly worthwhile.

Over the past few years, the differences between classes of CPUs have become blurred. Guide's minimum requirement for membership is an IBM 4380 series processor. There are probably users of other IBM systems, such as System/36, who would argue their shops are at least as sophisticated, if not more so, than a 4380 user. Are the guidelines for Guide membership becoming a problem?

That is going to be a continuing problem, particularly with larger intelligent workstations. I don't know how in the world we are going to face up to that. At the moment, we feel there is enough of a difference between the 4380 and larger systems. But suppose a really powerful intelligent workstation is announced by IBM. How are we going to ignore something like that? I don't know. I don't know exactly how we can be ignoring System/36 and System/38 now. I guess you have to draw the line somewhere. For example, if System/36 and System/38 users came in, you are getting up against the question once again of, "In Guide too big and how do you appease everybody?"

Does Guide get involved in issues outside the IBM user community, such as standards issues?

We are involved with standards issues. We have a liaison to the International Standards Organization and the American National Standards Institute group. For example, we are involved in Cobol standards.

We have given an opinion on the Cobol standards proposal at least twice in the past two years. Guse has a member of the Ansi Cobol committee, and he attends from six to eight meetings a year.

Over the years, Guide has maintained a fairly low profile with respect to the trade press. Why?

The reason, as it has been expressed to me, is that in

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IN DEPTH/NACK INTERVIEW

the past we didn't feel we got fair treatment in the press. There was a tendency on the part of the press to try to cast the user group and IBM in an adversarial relationship. And that didn't serve either Guide or our relationship with IBM. So we chose to keep a low profile.

How does Guide get its message across to IBM users?

I think the informal communication among people of a similar ilk is what probably gives users the necessary understanding of what Guide is about. You'll find that most people who dabble in software will know that within Guide and Share there are projects. The same thing is true with hardware. So I don't think it is a matter of becoming known by people in the business.

Giving users the opportunity to make a commitment to Guide is different. That is why I think we need to have a slightly higher public profile.

I believe the people the technicians work for need to understand that the Guide and Share user groups can have an influence. We have a lot of people who are interested enough to come to Guide and take an active role, but we are having trouble back at the shop convincing the boss that there is a real benefit.

How do you deal with keeping the right type of people in the organization? For example, I understand a fair number of consultants attend Guide.

I don't sense there is a great number of consultants in the audience or the membership at a particular time. There are some Big Eight accounting firms represented, and it is hard to determine whether their representatives are from the accounting or consulting side.

If someone from a consulting firm was trying to sell his consulting services, there would be a problem. We're not attempting to provide a marketing opportunity for anybody. The requirement for membership is that you have 4800 or larger equipment. If a consultant's firm has that kind of equipment, then I don't see any reason why we should try to keep him out.

What are your major concerns about the future of Guide?

I am concerned about whether we can attract the right kind of people to continue the organization. I think Guide has done a lot of good work over the last 27 years, and I think there is a lot of good work to be done. But we need real employer commitment. We have the overall propagation of the organization to consider.

It is somewhat easier for some employers to allow the first-hired technician to go for six weeks rather than allow the manager to go for six weeks.

The management function in an organization this size has to be addressed. Sometimes the technician is capable of growing into being a manager, sometimes he is not.

How do you get that corporate management commitment?

We have a computer executive meeting in every city we move into in an attempt to attract the top computer executives in that geographic area. We tell them what Guide is all about, and we have the IBM representative tell them what IBM thinks Guide is about. So the executive gets both sides of the story.

It is very difficult when you go to Guide as a nonspecialist and find out that you never heard of the first three topics. I can't say we're doing a good job in trying to speak more in the language of management, but we're trying. We have a management division that regularly sponsors a series of meetings we call Management Interchange. It's for the person who comes to Guide and really doesn't know enough about the technical aspects to talk JES3, but he might be the manager of people who talk JES3. He can voice his opinion, bring up his subject and see what the other people sitting around the table have to say about it. Sometimes, you get some very good value that way.

Have you noticed a change in IBM since John Opel took over as president?

I can't attribute it directly to John Opel, but there has been a change in the past two or three years. IBM is more open than it used to be. They are more willing to seek our opinions. They listen with an open mind—at least, it appears that they do.

It is easier for some employers to allow the first-hired technician to go for six weeks rather than allow the manager to go for six weeks. Sometimes the technician is capable of growing into a manager, sometimes he is not.

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IN DEPTH/BUTTERFIELD INTERVIEW



An interview: Bill Butterfield

How does Share deal with IBM?

The most formal way we have to deal with IBM is through the requirements process. That process is basically the same as Guide's. We have around 4,600 to 4,800 requirements in a data base. About three-quarters of those focus on specific products. In other words, Share says, "Something is wrong with X," and IBM responds by saying, "Yes, we recognize that, and we're going to fix it," or "We're thinking of fixing it."

The other quarter of the requirements are not exactly product specific.

For example, we'll say, "Gee, wouldn't it be nice if this product and that product went together in this way."

We have good communication. Share and IBM are on-line to a requirements data base. Of course, you never get confidential responses as part of that dialogue. As people walk through scenarios within the project, obviously you have to discuss the framework of different kinds of solutions. So that dialogue goes on all the time.

Beyond that, of course, IBM furnishes speakers for Share meetings. I think at our last meeting in Miami, IBM provided about 100 speakers out of 800 total sessions. Some were product-oriented, some direction-oriented.

How do you make sure Share

meetings do not become marketing-oriented?

There are three kinds of pitches at Share meetings: IBM pitches, customer pitches and vendor product presentations.

We really don't want marketing pitches. When a project sponsors an IBM pitch that is too marketing-oriented, we raise a flag and say to IBM, "Ray, this is really an inappropriate pitch." That is usually taken care of by the project manager.

Customer pitches, on the other hand, are often very straightforward. He doesn't have anything to sell. He stands up to make a presentation on how to use MVS for graphics. But an awful lot of our members, and certainly a growing number of them, are themselves vendors. Boeing Computer Services Co. and Martin Marietta Data Systems, Inc., for example, are members. A lot of consultants, who are sitting under their company's installation code, have themselves to sell.

When anyone who is a vendor of a product is talking about that product, even in the most technical kind of presentation, we call that a vendor product presentation. There is a policy covering that kind of presentation, such as the text of the presentation must be submitted and reviewed by a couple of layers of management. If it looks too marketing-oriented, we'll kill it.

We really try to ride hard on marketing-oriented pitches, because that is not what we're here for — to become a showcase for a product.

You are just finishing a two-year term as president of Share. How much time did it take away from your job at General Motors?

GM is happy to have an employee back. The commitment I asked GM for was 50%. That included all the travel and attendance at Share conferences, special planning meetings, meetings with IBM executives and attendance at Guide [we do interchange visits]. The travel adds up to about 25%. The other 25% is stuff I do back here. I said that anything above 50% I would do outside of working hours. I have stayed right within that 50%.

We have had presidents in the past who have said, "This is going to be a full-time job" and have asked for a leave of absence or a 90% commitment. There is a real disadvantage to that kind of commitment. You can put a lot of demands on the people who support you if you aren't careful. You can burn them out really fast or make them hate the fact that they ever made the commitment.

So I think you have to balance the situation. Share asks for somewhere around a 25% to 35% commitment from our officers, and we ask for about a 20% commitment from the directors. A few key people, such as the director of divisions, are sitting right around 35%.

Does that make it difficult to get good people to join Share activities?

Share has been more of a technical organization than Guide. Younger people, with more heavily technical backgrounds, attend Share meetings. In the past it has not so much been the level of commitment that was the

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IN DEPTH/BUTTERFIELD INTERVIEW

problem, it was the fact that the person really liked being a project manager and didn't really want to advance in the organization.

I think by and large, that problem is gone. The last two states for office have been almost fully contested. During my two years as president, it has not been difficult to get people to serve in key positions, like division manager and deputy of managers. Right now, people feel good enough about Share that we don't have any problems.

How do you make sure Share meetings provide helpful information to both large and small users?

I guess that is always a real challenge. Let me take, as an example, one of the groups that I think does a dandy job of that. That is the VM group. There are six or seven ongoing projects in the VM group. There is a whole range of projects there. For example, some are very advanced, focused projects, but there is a new users project as well. The MVS group is structured in roughly the same way.

Our group structure is delineated by the audience. Groups don't try to be everything to everybody. They have charters and areas of responsibility.

We are not carved up, like Guide is, into a working part and an open part. We offer internized tutorial and working project meetings throughout the week-long meetings. You can come to Share if you are new to some particular area, and you will surely find a program or tutorial that interests you. What we hope is that someday you will get to the point where you will want to come back and participate actively.

Is getting the user back the second time difficult?

On our registration form, we ask if you have attended a Share meeting in the last three years. If you haven't, we consider you a first-time attendee. We get somewhere between 25% to 30% "first-time attendees" per meeting. So we do have some degree of turnover. But we have a working category that is big enough to sustain our projects on an ongoing basis. And we have people who come back regularly and never work on projects.

Is it difficult for users to get the commitment from their employers to participate actively in Share?

I think the Share conferences are a fairly popular conference for employers to use as a reward. We hear a lot of "this is my time to come to Share, and I won't be back for two years." A lot of people come through like that. That makes it hard to get a continuing commitment. For example, IBM sent 10 people to the last Share meeting. We have a staff of about 300 people. Not including myself, two of those 10 are active members of projects that get to go back every time and participate in those projects. Eight were kind of passing through. Some of those eight will go back six months from now for another major meeting, but they won't go back with the goal of working. They will go back with the goal of collecting information in the data base area, or whatever.

Many companies seem willing to

I think the Share conferences are a fairly popular conference for employers to use as a reward. We hear a lot of "this is my time to come to Share; I won't be back for two years."

say, "I will let two of my employees participate and support the organization by taking an active role in projects, and we will make a continuing two-year commitment."

Sometimes companies are more willing to send systems programmers to a meeting rather than a manager. Is attracting high-level DP executives at Share a problem?

Yes, getting them to participate in Share becomes difficult. We have

tried various forums to attract managers. We have something we call Exec-session, which works well. When we are in a region, we invite the bosses of all our ribbon wearers or the chief DP guy to come in and sample Share.

We have also tried an ongoing executive topics forum. We have been able to build enthusiasm in it, and then it tapers off, maybe after a year or so when that group of people seems to be milked out.

We haven't found any effective

way to roll that process over and sustain it on an ongoing basis. You seem to get promoted out of your ability to attend and participate in Share.

What is Share's involvement with outside organizations, such as the ANSI and ISO standards committees?

We are quite active. We have a voting membership on the X3 committee. We are in the process of recruiting a person to serve on Sparc, the steering committee for ANSI. We have a very active manager of standards who, each year, gets 150 documents that are relevant to Share activities. He circulates those documents to the right projects for comments and then sends that information back to the standards world.

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How much influence does Share have with organizations like IBM and Asat?

I think we have a decent reputation technically, so I think we have had some substantial influence. PL/I is a prime example. Share has been active for years with PL/I standards. It is our participation on technical committees that really gives us our influence.

How much influence does Share have with IBM?

I think we have a whole bunch of influence. More in recent times than historically because we and IBM have managed to do a better job of understanding each other and working in a business relationship.

Share's tendency has been to keep

Some talk by a Share president gets incredibly misquoted or misunderstood, and it is made the topic of headlines. Another part of our aversion is that we have no real desire to go fight with IBM through the trade press. We don't have much leverage there.

IBM a little bit at arm's length. We do not want them in our hip pocket, nor do we want to be in their hip pocket. We want to present a proper customer view, in some sense influenced by what IBM says is the current strategy.

Take VM, for example. I think Share was singularly responsible for twice turning around IBM's direction on VM. IBM was about to kill it

twice. They failed both times, and I think Share was principally responsible for that — along with a ton of customers who were voicing their concerns through Share, as well as individually.

Another strategic requirement I can think of is the Large Systems Requirements for Application Development report, which really laid out much of the functionality of MVS/

XA. That was done almost four years ago, so it has had a long-term impact. But I think that report had a lot to do with influencing IBM to take the direction they have with MVS development.

More recently, there was the Software Services Task Force report. That laid out a whole ton of short-term service considerations and long-term quality considerations. I think that report has had a substantial impact. The final response that IBM put together represented eight separate IBM divisions, some of which, we have the suspicion, had not been talking much with each other.

The report forced IBM to look at a package of issues because we, as IBM customers, wanted a strategic approach rather than individual, divisional approaches. There were something like 14 toll-free numbers you had to call for services from IBM. This report pointed that out and said, "Wouldn't it be nice if we only had to call one." IBM looked at that and said, "That makes sense — we just never looked at that way before."

Have you noticed a difference in the way IBM deals with its customers since John Opel took over as president of IBM?

Yes, I have noticed a difference. I guess I probably should attribute it to some extent to John Opel's influence. But I think a lot of things have happened. Things have definitely changed.

For example, IBM is going to customers before products get locked in and saying: "Hey, we're thinking of doing X, and we can do it in two ways. Which do you think makes more sense to you?" There was a time when IBM never engaged in those kinds of discussions. I don't know whether it was the influence of the previous IBM management or the antitrust stuff, the lawyers or whether it was just that IBM believed they always had the right answer. I suspect it was pieces of all of those. In any event, dialogues go on today that never would have gone on seven or eight years ago. These are very valuable dialogues, by the way.

I really think IBM has become a more open company. I guess they've experimented and decided it is good business to be in touch with what your customers are doing.

Both Guide and Share have traditionally been shy about dealing with the trade press. Why?

The things that come to mind are a whole bunch of horror cases that have happened over the years. Some talk by a Share president gets incredibly misquoted or misunderstood, and it is made the topic of headlines.

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There was a time when IBM never engaged in those kinds of discussions. I don't know whether it was the influence of the previous IBM management, the antitrust stuff, the lawyers or whether it was just that IBM believed it always had the right answer.

So I think some of our aversion is to that. Another part of our aversion is that we have no real desire to go fight with IBM through the trade press. We don't have much leverage there.

IBM is not a monolith. There are always factions in IBM around any issue of substance. We think our most effective way of working with IBM is to find our friends and give them all the information we can to assist them in getting our views

across. They may win or lose, but there is no added benefit to IBM relations by taking the issue to the trade press.

You stated earlier that IBM does not come to either Guide or Share to press-release products. What is the advantage of being a Share member? Do Share members get any special treatment from IBM?

You mean back at the

ranch?

Yes, in terms of service and one's selection as an early delivery site, for example.

I think it is possible to become an early delivery site through Share. Both the IBM development laboratories and the National Accounts Division people are involved in Share and Guide. I think if you are active in an area and you have demonstrated a knowledge and expertise in that area, you might go on a tentative list if IBM has a real product to offer. Now I believe, from my experience at GM, that fundamentally the nomination process is still run by the local branch. So everything else has to be right at the branch.

The other thing that happens with Guide and Share participation, of course, is that you build up a set of contacts, and there are a lot of informal opportunities for discussion. When a bunch of technical people get together and start talking technical issues, a scenario for what's going to happen in the future will certainly come out. I mean they don't come out as product announcements, tidbits or directional statements. But if you are talking with someone who is an IBM development planner in some area and he asks you some questions, he's asking because that's the direction IBM is looking at, or he's asking because IBM is not looking at that direction and he has some concern that maybe they should be. That is the kind of exchange the people who regularly participate in Share get more often than the casual attendees.

Can your involvement with Share go against you in dealing with IBM?

I have never heard of that being a problem. I've never had to sit on anybody at Share for beating up on IBM. The key point is that this is a business relationship — you can disagree without being disagreeable.

IBM has accelerated its product introduction schedule over the past few years. Has that changed Share?

You're focusing on the hardware part of the story. You will not find a heck of a lot of discussion in Share anymore on the hardware or hardware families. I think it is certainly true that the tendency has been for a family of products to show up and, for upgrades to be available within that family. So while the density of announcements has increased, I think much of that has tended to be evolutionary rather than revolutionary. The revisions between families have not been exactly clear. For

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IN DEPTH/BUTTERFIELD INTERVIEW

I think it is possible to become an early delivery site through Share. If you are active in an area and have demonstrated a knowledge and expertise in that area, you might go on a tentative list if IBM has a real product to offer.

example, you have changes in generations of hardware without changes in generations of the systems software on that hardware.

In the software arena, there has been definite change in Share. There is a much greater concentration on what are IBM's strategic products that are going to proceed in an evolutionary way. And Share tries to put its resources into those strategic products and directions to have an impact and an

influence on them.

With IBM's rapid-fire product introductions, do you find it more difficult for Share to prepare formal positions on a product before that product becomes outdated?

That is one of the reasons electronic conferencing is of value. We do most of our white papers, strategic stuff, task forces and projects using our conferencing facilities.

ties. They help us get stuff done in a third of the time it took us with the old way of writing stuff, mailing it and holding periodic meetings.

Do you find Share members are putting a heavier emphasis on capacity planning?

Definitely. One of our really good projects is called the Computer Management Evaluation Project. The kinds of papers that are contributed to that project show that a lot of people are much more interested than they were a while back.

The other thing is that the system is no longer the boxes that sit on the user's floor. The system is everything that connects to those boxes. I don't quite know how to do capacity planning in the face of that. For example, what if I install 1,000 personal computers, not just IBM, but lots of different kinds of personal computers, installed on people's desks for different reasons. I have some guess what that might do to my data base, but I haven't the faintest idea what it is going to do to my mainframe. The added dimension, of course, is network capacity planning and integration of local-area networks and all the other types of networks you get into.

The new thing I've seen emerge in the past three or four years is the concept of enterprise capacity planning. For instance, what is the total amount of computing I need within my enterprise this year and the next?

What worries you about Share?

I guess it is the potential for growing in size that worries me most. If you plot our growth over the last several years and on into the future, in a few years we are not going to be able to conduct Share in the way we do right now. And it is not clear we have an alternative.

The use of automation is another area I am very concerned about. Can we employ the right method to continue to have the leverage we need for the future?

It is becoming hard to get volunteers because the skills are becoming more specialized. I now have a person whose specialty is electronic publishing. We're trying to develop good-quality publications. We are also studying how we might use conferencing to provide information exchange and access to our entire membership.

Right now, I think Share is clearly meeting the needs of the membership. So while I still have a lot of people who come in and never see again, I have a lot more people than I did before who are willing to work and contribute to the organization.

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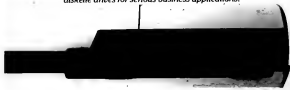
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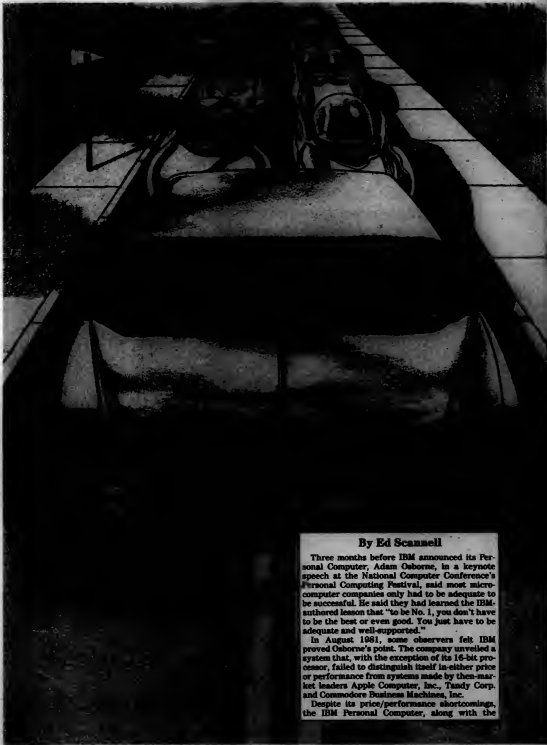
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IN DEPTH



By Ed Scannell

Three months before IBM announced its Personal Computer, Adam Osborne, in a keynote speech at the National Computer Conference's Personal Computing Festival, said most micro-computer companies only had to be adequate to be successful. He said they had learned the IBM-authored lesson that "to be No. 1, you don't have to be the best or even good. You just have to be adequate and well-supported."

In August 1981, some observers felt IBM proved Osborne's point. The company unveiled a system that, with the exception of its 16-bit processor, failed to distinguish itself in either price or performance from systems made by then-market leaders Apple Computer, Inc., Tandy Corp. and Commodore Business Machines, Inc.

Despite its price/performance shortcomings, the IBM Personal Computer, along with the

IN DEPTH/TOO SLOW FOR FAST LANE?

Personal Computer XT, owned a 22% share of the market, ranked up more than \$2 billion in sales and had become the de facto standard in the business market all by the end of 1983. The systems also created an industry within the industry of compatible makers content to be "adequate" and draft off IBM's success.

Because of IBM's unwillingness to produce more innovative products, some have begrudged the company its seemingly effortless success in the microcomputer market. A number of observers feel that a company with a research and development budget that exceeds the total revenues of some of its competitors should produce a more technologically sophisticated system.

They see no justice in such smaller, more adventurous companies suffering the bruises of exploring new

technologies and markets only to lose market share when IBM enters the market with what is usually a less ambitious product.

Besides being an opportunist, IBM has retarded the progress of technology, its critics say. Any business product IBM produces is bound to be successful. The company's Fortune 1000 following, which has invested millions of dollars in IBM mainframe hardware and software, will consider only IBM microcomputers.

It follows that even the most innovative software and hardware developers have been drawn away from the more sophisticated products and toward the Personal Computer. Without the help of these third-party developers, IBM would have been locked out of many of the vertical markets it has so successfully penetrated. Those defending

IBM's technology say that because of economies of scale, the company had little choice but to base the Personal Computer around Intel Corp.'s 8088 architecture.

"IBM isn't necessarily trying not to be innovative. However, IBM has a problem in that as soon as it announces a product, the whole world is going to try to buy it," said Alan McAdams, a Cornell University economist who served as a consultant to the Justice Department in its antitrust suit against IBM. "For IBM to get a product delivered from zero to huge volumes overnight, it had to select a whole series of off-the-shelf components that could be produced by others. The product is mediocre because that is all they could pull off the shelf," he explained.

To IBM's credit, the Personal Computer AT, unwrapped last August on

the third anniversary of the original Personal Computer's introduction, is as close as IBM has come to technology's razor's edge. Considered by most analysts to be a "next-generation" machine, the Personal Computer AT's basic configuration contains Intel's 80286 multistep chip, which is two to three times faster than the 8088, stores 256K bytes expandable to 640 bytes and is priced at \$3,995. This is a vast improvement over the basic version of the original Personal Computer, which had 16K bytes of memory, expandable to 256K bytes, and was not price competitive.

Nonstandard standard.

McAdams and other industry watchers would have no problem with the Personal Computer serving as the industry standard if it were a true standard. They contend that IBM has purposely made the machine a "nonstandard standard." By not revealing all of the system's microcode, the company is making it unnecessarily difficult for others to compete.

"It is useful to have a standard if everyone can produce to that standard, allowing the company with the product that best meets the interface requirements between hardware and software to win in the marketplace. However, that is not permitted to happen," McAdams contends.

"If someone tried to use the same microcode, then IBM sues them for violation of trade secrets. In a really competitive market, you wouldn't have these artificial legal constraints," McAdams said. He points out that such lawsuits have been effective weapons against cash-poor start-ups.

Some analysts predict that once IBM reaches the point where it is so thoroughly dominates the market it no longer needs the software and hardware enhancements of third parties to be successful, it will encrypt the Personal Computer's interfaces, making it impossible for the compatibles to compete. This was a tactic the company used against its competitors in the mainframe market.

These analysts also think IBM will put "mid-life kickers" into its microcomputers to shake the competition. A mid-life kicker, according to McAdams, is a hidden capability in hardware that the company can "turn on" with a minor enhancement when a competitor comes up with a similar function.

"My anticipation is that IBM will play [in the microcomputer market] all the dirty tricks it played in the mainframe area if it needs to. If it doesn't have to, it will be a statesman-like company. But if IBM is pressed, it will do what it has to do to dominate that market," McAdams said. "If you are a micro maker trying to be plug-compatible with IBM, the history is not good," he asserted.

Rick Scott, a spokesman for IBM's Entry Systems Division, said IBM has no plans now or in the future to keep compatible-makers and third-party developers at arm's length by closing off the system.

"Don Etridge [president of the Entry Systems Division] has said many times our intention to stay with the open architecture. It has been very good for IBM and our customers," Scott said.

Another advantage IBM is beginning to use against its smaller competitors is donating large numbers of

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IN DEPTH, TOO SLOW FOR FAST LANE?

Personal Computers to universities and high schools. The benefits of such gateways are twofold: first, experienced university teachers and students are given the opportunity to develop innovative, Personal Computer-compatible programs; and second, first-time users are offered the chance to train on IBM systems. These users, once they enter the work force, will probably prefer IBM's system over a competitor's. The government eventually halted IBM's donation of mainframes and minicomputer-class systems to schools because it did so to the de-

"Many compatible makers have some good products, but they don't have the level of profitability to withstand an intensely competitive price war," said Joan McKay, a securities analyst with Kidder-Penbody & Co. "In terms of investment, I wouldn't go near any of them," she said.

Since the Justice Department dropped its antitrust suit two years ago, IBM has exhibited some of the most competitive pricing behavior in its history. For the first time, particularly during 1984, IBM has shown a willingness to cut prices and current profits to gain higher market share in the future. This is a dramatic departure from its mainframe days when it could be brought to court for keeping prices too high.

Most analysts agree that the only thing that will stop IBM from leveraging its considerable resources is legitimate competition. With the possible exception of Compaq Computer Corp., analysts have ruled out any serious competition coming from the compatible makers. The vast majority of compatible manufacturers are barely profitable or awash in red ink.

"It is certainly impossible for a company of our size and position to set technology standards in the marketplace," said Dan Carter, president of Corona Data Systems, Inc., a compatible maker whose systems run 95% of all Personal Computer systems. "We can still do some innovative things, but you still have to work within the framework of what is being dictated by the big guy in

the marketplace," Carter added.

If IBM is to get any serious competition, most analysts say it will come from AT&T. AT&T finally entered the microcomputer market this past spring with a series of mainframe systems that use the company's proprietary, 33-bit Bellmac chip and a low-end Personal Computer clone. While it can certainly match IBM's financial and manufacturing resources, most analysts feel the company has too much to learn about the marketing aspects of microcomputers to be any kind of short-term threat.

"AT&T has to learn the business. It has to be focused, and it is not a focused company," one analyst said. "I don't know if it can get focused quick enough to be a major player in the marketplace," he said.

If neither the compatible makers nor AT&T are able to create any pressure, analysts feel that the only other source of competition is the Japanese. However, like AT&T, they have much to learn about the constantly evolving technological and marketing trends of the U.S. business market.

"I suspect that the pace of change in the business market will continue to be faster than the Japanese can keep up with," said Kenneth Bosworth, president of International Resources Development, Inc. in Norwalk, Conn. "The Japanese will probably continue to make bad choices, such as trying to distribute personal computers through office machine dealers, which is a ridiculous idea. The Japanese won't become a factor until innovation slows

Those defending IBM's technology say that because of economies of scale, the company had little choice but to base the Personal Computer around Intel Corp.'s 8088 architecture.

and standardization takes over," Bosworth remarked.

Despite its menacing presence in the market, even those that feel most threatened by IBM can find some good things to say about the company. Many have faith that IBM will be a benevolent dictator, that it will continue to create more business than it will take away.

"IBM certainly has brought some sense of continuity to an industry that was flung all over the place before the introduction of the Personal Computer," Corona Data Systems' Carter said. "If IBM had not standardized and opened up the architecture of the machine, there would probably be 500 companies that would not be in existence today," he added.

About the author

Ed Somnelli is a senior writer for *Micro* magazine in Framingham, Mass.

Besides being an opportunist, IBM has retarded the progress of technology, critics say.

gree that others couldn't match. The government ruled it was an artificial way of stimulating demand for IBM products.

While encrypting interfaces and making generous donations to schools are tactics IBM might use in the future to stifle competition, a more immediate weapon is pricing. Several analysts have already predicted that one or two more across-the-board price cuts similar to the 18% to 25% cuts made in June will force many competitors to seek the refuge of Chapter 11.



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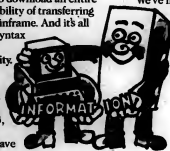
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IN DEPTH

Handling data integrity in relational DBMS

By V. Venkatakrishnan

Without the general integrity features, the relational data base degenerates into a mere tabular structure, no different from the traditional flat file of the pre-DBMS era. Projection becomes file extraction and join becomes file matching! What is worse, the tabular structure without the integrity constraints suffers from both poor performance and invalid data.

This is the year of the relational data base management system (DBMS). Leading vendors are announcing finished products based on the new technology. Relational DBMS are said to be more user friendly than their hierarchical and network counterparts because of the absence of any navigational requirements and the ability to join dynamically several records into a single logical view.

Experts hotly debate the performance implications. But those implications will be clear only when results from actual large-scale usage become available.

The attention paid to the performance issue is hardly surprising. What is surprising is that the complementary issue of data integrity is seldom mentioned.

The Relational Task Group of the American National Standards Institute has several criteria for labeling a DBMS "relational." These may be summarized as follows:

1. The data base is represented in the form of two-dimensional tables.
2. There are no navigational requirements imposed on the user.
3. Any number of tables may be dynamically joined or projected.

Commercially available relational DBMS satisfy, at least technically, all these requirements in varying degrees. These are, however, the minimum requirements of a relational model, which also insists that the two general integrity rules must be obeyed.

Without these integrity features, the relational data base degenerates into a mere tabular structure, no different from the traditional flat file of the pre-DBMS era. As a consequence, projection becomes file extraction and join becomes file matching. What is worse is that the tabular structure without the integrity constraints suffers from both poor

IN DEPTH/DATA INTEGRITY



Figure 1

performance and invalid data. Ironically, the more conventional hierarchic, network and even the traditional flat file structures easily provide for these constraints.

The first rule, called the entity integrity, states that the primary key of an entity cannot have null values (zero or space). The primary key of an entity is that special attribute that uniquely describes a single occurrence of the entity. It is implied that data is normalized and does not contain any repeating groups. The second rule is known as referential integrity. Stated simply, it requires

that if a data element is shared between two or more entities then the occurrence of the values for this element must be consistent between these entities.

The rationale for the entity integrity is fairly obvious. By definition, the primary key value uniquely identifies one occurrence of the entity. This is impossible to accomplish if null values are permitted. In the DBMS available today, entity integrity can be enforced through proper data base definition. In order to understand the referential integrity, consider the two entities order and order detail. Assume that they are both normalized to the third normal form (Figure 1). This means:

1. They do not contain repeating groups.
2. There is no partial dependence of attributes on the primary key.
3. There is no transitive dependence between the monkey attributes.

In Figure 1 the primary keys are shown by underlining. For each or-

Order number	Order date	Order total	Order status	Item number	Quantity ordered	Quantity shipped
123	04/01/84	100.00	OK	101	20	20
123	04/01/84	100.00	OK	102	30	30
124	04/01/84	100.00	OK	101	20	20
124	04/01/84	100.00	OK	102	30	30

Figure 3

der there can be several order line items, say an average of 10. Order number is the common data element that is the primary key in order and is part of the concatenated key in order detail.

A user entering order line details must specify both the order number and the line item number to enter the details such as quantity ordered, shipped and so forth. If a value of 255, for example, is entered for the order number in Order detail, then the referential integrity requires that the order entity must have at least one occurrence with the value of 255 for the order number.

If this integrity is violated, we have a serious problem of "orphan orders" — line details without corresponding orders and vice versa. Proper internal controls must be built and maintained by users to

avoid this trap, which can be quite expensive if it is not recognized early.

There are literally hundreds of situations where the exposure is more subtle than this but just as severe. In the hierarchic and network DBMS this exposure can be avoided by selecting the suitable options for the linkage between the two entities so that line details can be added only after corresponding order information is entered. By contrast, in relational DBMS there is no linkage between the two entities and the integrity becomes the sole responsibility of the user. If unnormalized data is used, the problem is compounded with performance degradation.

Two-dimensional tabular structures do not allow repeating groups for the simple reason that

Order number	Order date	Order total	Order status
123	04/01/84	100.00	OK
123	04/01/84	100.00	OK
124	04/01/84	100.00	OK

Figure 2

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they add a third dimension. There are basically four ways of "flattening" the repeating groups so that they can be accommodated into a two-dimensional table:

1. Substitution nulls for values of nonrepeating attributes (Figure 2).
2. Repeat the values of nonrepeating attributes (Figure 3).
3. Make each-repeating attribute a distinct data element (Figure 4).
4. Normalize the data (Figure 5).

The first method violates the entity integrity by allowing null values for the primary key (order number). As a consequence, if the user issues a select or join command involving this entity all the records with null values for the order number are ignored. A join involving tables with null values for the joining operand will result in the inadvertent elimination of these records, thus seriously affecting the integrity and usefulness of the operation (Figure 6).

The second method does not violate the entity integrity. There are other problems, however. Curiously, these problems dramatically impact performance by unnecessarily increasing space requirements for data storage.

The need for more space, in turn, increases the I/O activities and the core requirements because of larger buffers needed to accommodate redundant data. Performance will suffer as a result.

The third method also preserves entity integrity but suffers from problems similar to those of the second method. An added concern is that we do not know how many line details will be needed for each order. Usually a large number is chosen, resulting in wasted space and the attendant problems.

Normalization is generally the best method of flattening the repeating groups. In the normalized structures, only the keys are stored redundantly, and the impact on performance is minimal.

Role of data model

The discussion above points to the critical role played by the subject data model in preserving integrity in a relational environment. In fact, the data model is the most accurate representation of both the entity integrity and the referential integrity constraints. Entity integrity is characterized by the primary keys of the entities; the referential integrity constraints are mapped by the association between the entities.

In our example, the association between order and order detail is said to be "one to many." This means that for each order there may be one or more order line details.

For a specific order line detail, however, there must exist one and only one—order. Both the data contents and the integrity constraints from the data model are used in the physical design of the data base. The exact mode and syntax used in the design is specific to the DBMS environment.

The implementation of the integrity constraints under the flat file, hierarchic and network architectures will be briefly described first in order to appreciate what is involved in the relational environment.

Nonrelational architectures

In the traditional (non-DBMS) flat file environment, the order file will contain order detail as a repeating group. A typical implementation may

be a Cobol OCCURS or OCCURS DEFENDING ON clause. The file may also be sorted on order number. Whether the file is accessed sequentially or randomly, the user must have the order record before entering order details. This way the integrity is preserved.

A typical hierarchic architecture is that of DL/I from IBM. In this DBMS, order will be the parent segment with order number being the

unique key. Order detail is implemented as the child segment of order with or without the unique key of line item number. An update (add, change, delete) of order detail then requires the user to traverse the parent order segment.

In other words, such a transaction is permitted only for a given order, and there is no way of accidentally including line details for nonexistent orders.

As an example of network architecture, consider Outland Software, Inc.'s IDMS. The order entity becomes the owner record and the order detail one of its members.

The two records constitute a Co-dasy set. The membership option of "mandatory/automatic" is chosen for the set.

This means that when a specific order is deleted the corresponding line details are also deleted. Also,

Figure 4

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IN DEPTH/DATA INTEGRITY



Figure 5



Figure 6

**IF YOU DON'T WARE UCC-4,
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THAN YOUR DP INVENTORY.**

updating order detail involves establishing currency (data base position) on the corresponding owner (order) record.

Direct-retrieval access to either record type can be provided. Thus, once again, the integrity is enforced through the DBMS software. Of course, the data administrator has the responsibility of specifying proper parent-child or owner-number options in the data definition language of the DBMS.

By contrast, in relational DBMS there are no user-accessible links between the entities, and the data administrator has no way of specifying the referential integrity constraints. Implementing these vital constraints is left to the application or the person performing update operations on the data base.

In a heavily maintained production environment, the risk of exposure caused by this is extremely significant. It takes only one bad program or a casual user to corrupt the data base accidentally. What is worse is that this condition may not be detected for quite a while, and it may be too late if and when it is detected.

The situation is exacerbated by the fact that the relational architecture is new to the vast majority of installations. Here are some steps that may preserve the data base integrity in a relational environment:

- If possible, limit the scope of data base updates to one organizational unit per entity in the logical model. In this context, adds and deletes are more serious than changes to the data base.

- The data base definitions and future changes must strictly follow the formal data model. The consequences of making data base changes without referring to the model can be detrimental.

- All update programs must have specific code to check for integrity constraints as specified in the logical data model. The code does lengthen the program relative to the nonrelational environment. However, reusable (copy library) code may be developed to alleviate the situation.

- Any uploading of data from personal computers must be carefully and strictly regulated. One approach is to make the upload from the micros to trigger a mainframe transaction that will execute the reusable code to enforce the integrity constraints.

Relational DBMS offers more freedom to users. Accompanying this newfound freedom is the responsibility for data integrity.

Regardless of whether this is done through DBMS or application software, without these constraints the data base will fast become a jumble of meaningless values from which no intelligent information can be derived. Deliberate planning and decisive steps are necessary to avoid a catastrophe in what is otherwise a powerful and promising tool.

About the author

V. Venkateshraman is data administrator in the Financial Division of Aetna Life and Casualty in Hartford, Conn. His responsibilities include building logical data models to satisfy a variety of business needs, integrating logical and physical design in a multiple DBMS environment and providing data dictionary and applications development support.

Database software
that makes you
look

What end users don't know may hurt ~~them~~ you

By I. Steven Kerns

The most obvious and efficient way to begin end-user training is to categorize those users by some natural parameters: by organizational level, by general function, by information-handling function, by requirement for a specific information-handling tool or by skill level. Those categories suggest the best training techniques.

Organizational level. Consider the following groupings by job level:

Executive management. Key decision makers can benefit from access to timely and accurate information to meet business objectives. But because their day-to-day activities are relatively unstructured, unpredictable and not very repetitive, the discretionary time they have available for education and training is limited. Further, they have the least exposure to key-boards and software packages. Executives are also scattered through an organization. Executives benefit most from computer literacy education, which helps them make decisions about acquiring and using hardware and software not only for themselves, but for their employees.

In providing training for executives, it is crucial that trainers have credibility with an

A skilled user is less of a burden on DP resources. Training experts suggest techniques to help users apply new technology to their jobs.

IN DEPTH

IN DEPTH/END-USER TRAINING

executive audience. At a minimum, computer experience and a professional presentation establish credibility. The trainer must also be sensitive to the executive's image — executives do not want to appear dumb. Courses or other techniques should be short and self-contained. One user recently developed computer-based training for an in-house time-sharing service. Each segment took approximately 30 minutes to complete.

Course contents must always emphasize the payback for the executive's time. Executives will gladly spend time to be trained if the benefits are clear. Each training session must have a straightforward objective.

Management. Many of the current personal computing products provide middle and first-line managers with information and information-handling tools helpful in controlling and directing the day-to-day operations of the organization.

These managers, in order to maintain productivity in their areas, will need skill in operating the technology and in developing an ability to adapt and apply the technology on an ongoing basis. Managers should be able to answer questions from their staffs. Consequently, training for managers will need to be in-depth and aimed at developing skill, in addition to providing information for them to become more aware of the system's potential so they can envision ongoing opportunities for applications. Managers also need information on other training resources to pass on to their staffs.

Professional and technical staff. Professional workers perform activities in support of their managers and executives. Their work is unstructured. They themselves have minimal administrative support, so they are most amenable to the introduction of tools to support them. They are often highly self-motivated, with experience using technical tools in their work, so they will easily adapt the tools. Training for professionals should emphasize enhancing skill in operating the technology and provide guidance in how to apply the tools to specific functions (accounting, engineering, analysis and so on).

Secretarial and clerical staff. The word and text processing industry has selected the secretarial and clerical roles as the first candidates for automation in the form of improved text creation, editing, data entry and maintenance. More recently, tools to assist with filing, mail, calendars, scheduling, telephone management and distribution have been introduced. Training for secretaries and clerical staff should be geared primarily

toward developing skills in a specific application such as word processing, billing or record maintenance. Training should be provided by skill level — novice, trained and adaptive.

Function/departments. End users' training requirements could also be categorized in terms of departmental or functional responsibilities (marketing, human resources and so on). This categorization will be increasingly important as

vendors provide products that are functionally oriented.

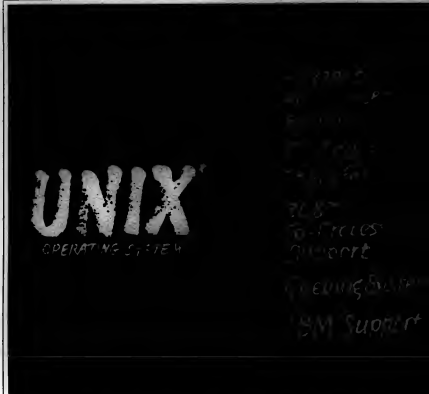
Information-handling function. Because the tools currently offered are still being applied generally, it is easier to categorize the functional requirements by the information-handling requirements of each area. In providing training by information-handling function, a conceptual overview is appropriate in addition to training in how to operate

and apply specific tools. The general information-handling requirements are:

- Document processing.
 - Numerical analysis.
 - Information retrieval and manipulation.
 - Communications.
 - Presentation aids.
- skill level. Regardless of how end users are categorized — by job level, function or tool required — they must also be categorized by their current skill levels. Training should take into ac-

count whether the user is:

- A novice — has had no contact with computers. Novices may believe they have no technical aptitude and that computers are a threat. The novice category also includes the casual user who will operate a workstation infrequently and will quickly forget how to operate equipment.
- Trained — has used computers and has had training in operating them.
- An adaptor — uses



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IN DEPTH/END-USER TRAINING

Because the hardware manufacturers have been under intense competitive pressure, most have unbundled the bulk of customer support. In addition, they have increasingly offered self-paced training aids.

computers, may have been trained by others or be self-trained and adapts the technology on an ongoing basis.

The sources of end-user training include hardware and software manufacturers, training services and training package vendors, as well as in-house resources.

Manufacturers. Nearly all of the end-user hardware manufacturers offer some training for purchasers. This is particularly true of the word processing or integrat-

ed office system products (Digital Equipment Corp.'s All-in-One or Data General Corp.'s CEO). Vendor support for these products includes documentation, manuals and actual training sessions. The training sessions are usually available for only a limited number of employees as a part of the system purchase price. The vendor suggests that it train one employee per system; this employee can then train others. This is a "train the

trainer" approach. Other employees can be trained by the vendor, but at additional cost averaging around \$300 and up per day per employee.

This type of training is good only for those who will actually operate the system or who will supervise operations. Because the hardware manufacturers have been under intense competitive pressure, most have unbundled the bulk of customer support. In addition, these manufacturers have increasingly offered self-paced training aids.

Many of the manufacturers also provide educational consulting services to large purchasers. They will spend time with customer representatives analyzing current skills and identifying necessary new skills. The manufacturers with multiple product lines provide computer literacy courses, which are free to large customers or potential large customers. They also have courses designed for end users as well as computer professionals.

Personal computer manufacturers, however, primarily offer only documentation, manuals and computer-based training aids.

Software vendors typically offer training solutions consisting of various techniques that depend on the cost of the product—the greater the cost, the more comprehensive the training solution; the smaller the cost, the more likely that solutions will be computer-based.

Training vendors. The tremendous growth of the end-user computer industry has led to an increase in training service and training package vendors. Both have been established to meet deficiencies resulting from inadequate or insufficient manufacturer training and serve as an alternative to developing training resources in-house.

Training services are offered by individual consultants, small local consulting firms, larger national organizations such as Deltek or National Training Service, Inc. and computer stores such as Computerland and Businessland. These firms offer a variety of training techniques, including one-on-one training, lectures and seminars, workshops where students hear lectures and gain hands-on experience with equipment, and computer-based instruction.

A growing number of companies offer independent study training material only. The most typical independent study training package is computer-based training, although other media such as video are also used.

In-house training resources. Recognizing the deficiencies of manufacturers, the perceived higher expenses

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IN DEPTH/END-USER TRAINING

The human resources department already has the mechanisms for advertising and promoting training and development, perhaps through a company newsletter. Many users feel that human resources staff members make better trainers or training facilitators than MIS staff.

of training services and the need to provide ongoing, customized training, companies are increasingly developing in-house end-user training resources. These resources include the MIS staff, the information center and the human resources staff. In-house trainers ostensibly know their employees, their corporate culture and the applications of end-user computing such that they can provide the most appropriate form. Programs devel-

oped by in-house staff range from the use of manuals and self-paced computer-based training to large training centers that sponsor continuing programs on computer literacy, skills development and specific applications.

The most commonly used in-house resource is, not surprisingly, the MIS staff. Programmers and systems analysts who have been involved in the development of end-user computing applications or who have assisted

in evaluating word processing or personal computers have been selected to train new users. Use of time-sharing resources is facilitated by one-on-one training from MIS staff and by scheduled workshops that include hands-on practice with a variety of end-user tools. MIS staff may also offer end users self-teaching aids, workbooks and manuals.

In many companies, the information center, a service from the information systems department initially created just for allowing end users access to mainframe computing resources, is now the locus of end-user introductions to personal computing and, in some companies, the locus of word processing system use.

The human resources department is often best able at institutionalizing the training. This department already has the mechanisms for advertising and promoting training and development, perhaps through a company newsletter. Many users feel that human resources staff members make better trainers or training facilitators than MIS staff. Of course, they must be trained in end-user computing first, either by MIS or by outside sources. (They needed "train-the-trainers"-type training.)

Traditional techniques. There are three general categories of training techniques: traditional, technological and adaptive.

Since users have a variety of backgrounds and different needs and learning capabilities, many training experts say that unless instruction is one-on-one, training falls short of its goal. In the ideal case, end users have their hands held as they are exposed to new techniques. Each individual could have materials tailored to meet his specific training needs. This probably is the best way to train executives, if the trainer is not only knowledgeable about the use of computers but can convey how to develop skills, assist the executive in applying software to solve specific business problems and mesh with the executive's personal style.

Unfortunately, one-on-one training can turn into a demonstration only and not provide the trainee with any hands-on experience. With such high labor content, this type of training is probably the most expensive.

One-on-one is particularly effective for follow-up training. Once an end user has gone through initial training and has begun to apply the knowledge on the job, then a trainer can quickly assess progress and guide him to more effective applications.

For larger numbers of trainees, a structured lecture or seminar, combined with hands-on access to personal computers or word process-



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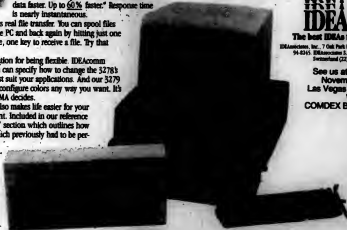
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IN DEPTH/END-USER TRAINING

ing systems, is cost-effective. The costs include:

- Course fees or instructor salaries.

- Facilities and equipment.
- User training time.
- Travel-related expenses if the workshop is held off-site.

The best workshops provide minimal concept, maximum hands-on experience and an opportunity for the trainee to engage in question-and-answer time with the trainer. The hands-on portion should be performed using a problem the user needs to solve.

A useful instrument that trainees can take away with them is a "cheat sheet" — a single sheet, the smaller the better, that contains the most frequently used commands or instructions, along with space for the user's notes.

Technology-based techniques. With computer-based training (CBT), information and instructional materials are presented in a series of screens, sometimes using text, sometimes graphics. The user responds to the instructions, and the system provides feedback on responses. Material can be designed to let a user select only those topics he needs or wants. The system will wait for his response, so each student can progress at his own pace. The system can test students on whether they have grasped the concepts or feel they have learned the skills and, if not, the system can repeat the instruction set.

A company may also choose videotape, videodisk or audio-based training products. If developed in-house, they can be tailored to address specific needs and applications. They

provide a high degree of student choice if they are self-paced and are an excellent way to introduce a system.

Unfortunately, these techniques have a one-time cost associated with developing the training packages, and unless production facilities are already available, those costs can be prohibitive.

Adaptive techniques. Training experts advocate techniques that help trainees in adapting or applying new technology on an ongoing basis.

Within each group of trainees, one or more students emerge as natural leaders and teachers. They have an aptitude for what they have learned and an ability to pass on their understanding and enthusiasm. These people should be nurtured, because they are invaluable to their peers. Their peers seek them out because they are

accessible, understand their needs and have the same problem to solve.

These users can be given extra attention and training and kept up-to-date on new training materials and new applications. Their use of the new technology will often be the most adaptive and should be shared with others in the organization.

In summary, the goals of end-user training are to develop computer literacy, skill in operation of hardware and software and an ability to adapt new technology to business needs on an ongoing basis.

The primary benefits of end-user training are to reduce the learning curve of new users and to achieve the benefits of the technology more quickly.

End users can be categorized by their job level, their functional responsibilities, their information-handling requirements, the specific tools they need for information handling and their skill level. The costs of training should be included in the overall cost of the system acquired. A cost/benefit analysis is appropriate.

In each group of trainees, one or more students emerge as natural teachers. They will be invaluable to their peers.

ate in comparing the cost-effective-ness of one training method over another.

The suppliers of end-user training are varied in quality and in the training techniques they use. Each of the sources has value:

- The manufacturer knows the product.
- The training vendor knows how to train.
- The in-house trainers know the company and the end-user needs and applications.

Workshops are cost-effective for training larger numbers of end users, particularly if they can be tailored to those users. Computer-based training is cost-effective, adaptive to individual needs and builds hands-on experience with a system. Other media can also be effective if they are tailored to the end user's needs. Peer training and the learning center build adaptation abilities.

The most effective training will have the following characteristics:

- It is targeted to meet specific business and end-user needs.
- It is tied to the company's way of doing business.
- It uses actual cases or addresses actual problems familiar to the end users.
- It consists of ongoing training, with frequent fine-tuning to ensure that training continues to meet end-user needs.
- It uses managers and peers as trainers to promote ongoing application of new technology.

About the author

Steven Kerns is principal consultant with Input, a computer market research and planning firm based in Mountain View, Calif. He has 15 years' experience in the information industry.

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IN DEPTH/MICRO PROJECT MANAGEMENT

The microcomputer offered the project planner, for the first time, some of the utility and flexibility that his own mind afforded him, and at least the potential for future increases in computer memory and computational power.

These are small inconveniences where very large processing tasks are concerned, but waiting for days to process small to medium-size projects can cause the entire project schedule to slip. Project planners are also required to spend large amounts of time at a remote project site, a circumstance that practically eliminates computer project management when only mainframes are available. Minicomputers required

only minor modifications in existing project planning software. Although they had less memory, the reductions were not substantial enough to restrict most applications. The introduction of microcomputers with very small amounts of RAM, on the other hand, began a new era in software development in which economy was added to the objectives of creativity and thoroughness in programming. Project management, a memory-intensive

discipline (for humans and computers), suffered as a result.

More flexibility
In spite of this setback, however, the microcomputer offered the project planner, for the first time, some of the utility and flexibility that his own mind afforded him, and at least the potential for future increases in computer memory and computational power. That potential is now being realized. Indications are that eventually the term "micro" will apply only to the machine's physical size; desktop computers will have all the capabilities an individual user could possibly need, plus some. Eight-bit, 16-bit and now 32-bit microprocessors have been developed, and the technology has not approached its limits.

Evaluation of software
The evolution of project planning software has roughly paralleled the evolution of microprocessors. Project management software for microcomputers is now in its second generation and seems rapidly headed toward real maturity.

First-generation packages were primarily for home computers with up to 64K bytes of RAM. They met the needs of very small businesses and home enthusiasts. These packages included Milestone, marketed by Organic Software of Livermore, Calif., which was one of the first products on the market, and Visio's Visi Schedule. Visi Schedule came out shortly after Milestone and dominated the market for as much as a year, during which a number of similar products began appearing.

One of the more successful of these products, the Harvard Project Manager from Harvard Software, Inc., includes network plots (a very good feature), but fails to introduce other advanced features such as partial relationships.

These programs have good interactive designs, but they are best when working with a limited number of activities per project, covering short time spans and then only with simple finish-to-start activity relationships. They have a number of other limitations as well, including inadequate reporting functions, no provision for apportioning resources and only a single defined duration, usually days.

Managers who were thrilled with the tool as first no doubt became frustrated when the size and complexity of a project exceeded the capabilities of the software. For example, a manager needing to see the relationship between the third and 212th activities cannot see it on the screen, so he has to perform a series of repetitive

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IN DEPTH/MICRO PROJECT MANAGEMENT

commands, stepping through the project plan between the two activities (assuming the program is capable of handling more than 200 activities). In essence, the tools do not mirror real-life project planning circumstances sufficiently.

Second-generation micro project management tools have made significant improvements in most of these areas, mirroring actual project development much more precisely. They typically re-

quire at least 128K bytes of RAM. The better programs use 256K bytes of RAM or greater and are designed to allow optional amounts of RAM for different numbers of activities.

Utilizing increased memory (good second-generation software handles at least 500 activities) defines activity relationships besides just finish-to-start, has improved graphics and report producing capabilities and a variety of other features that move

it into the realm of more legitimate business project planning.

The program PG&E chose above 30 other packages for its micro project management is Perimaster, marketed by Westminster Software, Inc. in Palo Alto, Calif. Perimaster features the capacity to handle up to 2,500 activities, the option of either activity-on-arrow or precedence network development, resource tracking capabilities and relative ease of use

for its degree of sophistication.

Other developers that have products with a number of good second-generation features but fall short of the mature product include Project Software & Development, Inc., Jelcom Microcomputers Plus and Breakthrough Software Corp.

Third generation

Third-generation packages will piece together the good aspects of existing sec-

ond-generation products and combine them into one. These primarily have to do with speed, because programmers, concentrating on developing feature-packed products, spent less effort in that area. There are a number of specific features, though, which PG&E has designated as essential for effective micro project management.

First (but not necessarily most important) are ease of learning and ease of use. Since the nature of project management is so closely related to the nature of business itself and since it usually requires many years to become a very good project manager, software that reduces the learning curve through extensive use of command sequence menus (which could be bypassed once memorized for quick entrance and exit of the program) will increase the efficiency of new project managers significantly.

Because of the wide range of end users, the program should be simple enough for the beginner and powerful enough for the most sophisticated user. Many of the advanced end-user features developed recently — such as windows and drop-down menus — should be used to their full advantage.

Graphics capabilities should include a number of standard reports such as sorted and selected bar charts, network diagrams and various tabular reports. Because every organization has its own reporting structure, there should be provision for designing special report formats, including headers, footnotes and descriptive fields for all types of reports.

Good disk reports, readable by other popular spreadsheets, word processors and data bases should also be available. Pull roll-up (hammock) capabilities (to summarize the duration of many activities and/or resources) within the project are essential to get summary schedules, as well as the ability to roll up several projects.

The number and relationships that can be entered should be no lower than 1,000 and preferably 2,000. Also, activities should be entered as closely as possible to the way text is entered on a word processor to take advantage of immediate and full editing capabilities. Dependency relationships between activities should include not just standard finish-to-start, but start-to-start and finish-to-finish with the capability to enter lag times as well.

Activity durations should allow the option of being designated as days, weeks or months. Changing durations from one designation to the next should be performed by

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IN DEPTH/MICRO PROJECT MANAGEMENT

a single command that will change all activity records as well as all screen and printed reports.

The ability to designate different types of resources, such as labor, materials and dollars, should be available. The rates and dollar amounts should be automatically recalculated according to their apportionment to activities. Resources should be leveled using available float and, if necessary, affect the critical path. Total resource amounts and fixed activities should be defined. Resource reports should give both project activity reports as well as line department totals for both the initial project and across many projects.

Achieving these goals appears to depend on two factors: programming in C and writing the software for one of the new generation of supermi-

cro. The C language is currently considered the best programming language available for microcomputer business applications because it is very fast, very flexible and, most important, very transportable.

The 32-bit processors will be changing continually as they become more refined, and C, which has become very popular because of its programming attributes, will allow a program to be easily ported to other computers. The memory available in a supermicro will further simplify the programmer's job, at least partially removing the concern over economy and allowing more concentration on speed and adequate features.

Strategy for today

For those not willing to wait for the arrival of a mature micro project

management package, the best alternative may be to choose a second-generation package based on research to determine the best and most likely one to mature.

From this point, it may be necessary to modify the program in-house for an individual situation. For example, PG&E has hired a firm specializing in programming and consultation. It helps end users to develop interface programs for Pertmaster in order to load work breakdown structures with durations and dependencies into a word processing program (a clerical task) and bring the schedule plan bar chart out of Pertmaster into special PG&E forms in Supercalc III.

Second best, and possibly not much better, is the alternative of commissioning an independent software developer to create a project

management program according to your own specifications. This would incur great expenses and might take a year or more, during which time a mature project management tool should appear on the market at a much lower price.

New era?

The possibilities for implementing an ideal project management tool suggest a new era in formal project communication. Roll-up capabilities through the use of work breakdown structures will eventually be used with an ideal project management package. These capabilities will make it possible to build a report-generating structure moving from the most specialized to the most general information.

For example, an engineer stationed at a remote project location will be able to send updated, detailed information to the project manager via modem, detailing the status of the lowest or most precise level of activities for which he is responsible. The manager, in turn, prepares reports on the level of detail for which he is responsible and for the levels above him in the organization. Upper management of the company then receives, possibly by microcomputer over a local-area network, the most accurate information possible, at a level that is appropriate for its needs.

Although methods of local-area networking offer possibilities for connection of microcomputers at corporate and other office locations, the danger is that microcomputers will begin to be viewed as fixed workstations. This viewpoint would essentially return computer project management to the mainframe era. But microcomputer networking is also taking great strides, and we may soon see very powerful portable computers temporarily tapping into local-area networks for reporting purposes.

Users' expectations

The microcomputer industry has done an excellent job in developing better products quickly. End users are well aware of it.

The level of expectation, especially in the Silicon Valley, is so high that customers find themselves surprised and a bit put out when quality products from emerging technologies are slow in coming. And if products do not perform as quickly and easily as expected once they arrive, users are proportionately less happy.

Project managers' levels of expectation are especially high, partly because of the immediate need for good microcomputer project planning tools and partly because the mood of the personal computer software market is breeding impatience for new and better products.

Although the task will be difficult, it is not beyond the level of technology or the capabilities of developers to produce the ideal micro project management software package in the next year.

About the author

Brian Pace is a project management analyst in the Project Management Services Department of Pacific Gas & Electric Co., a San Francisco-based, investor-owned utility company. Pace is currently responsible for researching the development of the personal computer as a project management tool.



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IN DEPTH

Information resources in user hands: when, where and how much

Many argue that users managing information resources almost never works. Admittedly, user control should be approached with caution—but approached, nevertheless, and cautiously implemented, not deterred.

By Stephen L. Priest
and William A. Norko Jr.

In the late '50s and early '60s, hardware, software and systems staff resided in, and were managed by, user departments that had budgets large enough to acquire such resources. In the mid-'60s, a policy of strict adherence to centralization of these resources emerged.

First, larger systems offered economies of scale that could not be ignored. Computers and other information resources were so expensive that organizations mandated the co-location of all information systems and services.

Second, and equally important, executives realized that information resources were limited, and in determining priorities for computer services, they needed to consider the information needs of the whole organization. A centralized DP or MIS department would allow senior management to monitor total information needs effectively and also to control companywide use of information resources.

Until the late '70s, the central DP or MIS department was the sole information resource department. As well, DP or MIS almost always reported to the chief financial officer of the organization, historically the first end user and one requiring and maintaining strong control of their resources, computers included.

Today, positions in marketing, finance, human resources, health care administration, public administration and various other areas require the manager to have both education and experience with computer systems. Users have become more sophisticated and at ease with computers, and demand for computer services is enormous. Since the late '70s, as that demand for information resources has increased, technology has supplied new cost-effective solutions that work against the centralization of these resources.

The issue of how information resources should fit into an organization concerns two questions: Where should the information resources physically reside, and what are the lines of responsibility?

It is critical that senior management recognize that the path to a successful

information systems department lies along the road of cooperation and joint accountability. That department serves the total organization and to succeed must be a partner equal in importance to each of those with whom it must assume accountability.

In addition, the central information resource manager, the executive primarily responsible for creating the environment, must allow and foster this interaction. A central information resource department should report to the chief executive and not to another management level.

This view is also consistent with historical developments. While the advances in technology have in many cases eliminated large systems' economies of scale, of course there is, and will remain, a need for central resources. In addition, technological changes will not eliminate the need for senior management to monitor the total information needs of the organization and to control the companywide use of information systems and services to meet those needs.

The answer to the former question, where the resources should reside,



IN DEPTH/WHEN, WHERE, HOW MUCH

The information resource view

The management information systems (MIS) view held that the computer should not be limited to providing managers with an understanding of the current state of the organization, but should also be able to recall past experiences and use past and current data to try to project the future.

The information resource view expands on the MIS view. In addition to providing the three windows of information (past, present and future), computer systems and other technology, now as a group called information

resources, should make information immediately accessible to managers wherever they may be and whenever they may want to use it.

The central information resource manager must be as much at ease with the world of the users as in the specialized realm of technology. This executive faces the task of revising and replacing existing systems to reflect changes both in technology and also in company needs. The position must be filled by a person who has a firm understanding of the overall

organizational goals and who is firm in not subordinating them to departmental goals. The manager must also possess a genuine sensitivity to information resource users' needs, a balance of technical and managerial skills and a project orientation.

The user information resource manager is the user department's advocate regarding needs. This person maintains the current information systems and services and coordinates change through the central information resource manager.

follows a different line of logic. The user departments have their own information resource managers, who are responsible for coordinating the use of systems and services with the central manager, as well as for overseeing the use and maintenance of current resources.

The user departments should be educated in the use of these resources and be as involved as the central information resource department in developing them for their own use. Where should the resources reside? With the users.

Valid arguments against user control of the physical resources quickly surface. Many users are not educated about their responsibilities in this management role. Many do not have the technical staff or knowledge; others do not have the desire to assume these additional responsibilities.

Further, if they do assume this function, the monster of uncontrolled modification and change is loose. Once the resources (hardware, software and staff) reside with the user, how can changes to them be controlled?

As a general principle, information resources should be managed as close to the users as possible.

Of course, some information systems and services are multiuser by nature and should not be controlled by only one of the users, since that person or group is likely to take too narrow a view of how a system or service should be used (for example, data bases or information centers).

Indeed, many would argue that user management of information resources will almost never work and should always be approached with caution. Admittedly, it should always be approached with caution, but it should be cautiously implemented, not cautiously deterred.

Many well-meaning plans for allowing users more control of information resources have ended in disaster. But by and large, these problems concern implementation, not principle. As a general principle, information resources should be managed as close to the users as possible, and direction of that management task should be under the control of the central information systems department. We argue for central control and direction and also for the maximum individual user authority.

Sincere efforts should be made to enlist user departments. The idea of additional control over one's objectives is a strong motivating influence. Often users are quite willing to acquire additional education and gain some experience with information systems in order to manage their own information resources. When the effort to enlist fails, however, the central systems department has to play the more demanding role of planning, implementing and managing the ongoing use and maintenance of the information system. This situation should be the exception, not the rule.

The role of overseeing the user

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system output and planning for future system use still falls to the user information resource manager. The user department must play a prominent role in the use of information resources, even if that role does not include bringing those resources physically into the department. Any potential user who does not recognize this need for interaction should be avoided.

Central control

What is the role of the central information resources department, then? Control. The central group establishes the framework in which these satellite areas will exist. The central department is responsible for identifying and promoting the global view of the organization's information needs. Once these needs are identified, the central department

The steering committee should be composed of senior and line management representatives who have visibility at all levels of the company.

must recognize changes and bring them to the attention of senior management.

An information resource department that sits as an equal partner with all the user areas has an equal opportunity to develop production, administrative and financial systems. It can serve the special operational needs of each area while providing a common data base for the reports needed by senior and middle management for overall control. The organizational structure,

then, has computers and other information resources residing in the user areas whenever appropriate. In addition, the role of all information resource managers is to search out and develop these appropriate situations.

Furthermore, the central department has a dual role. It provides senior management with an organizational mechanism to monitor needs and control resource use. Second, it appropriately has many of the information resources physically co-located within its confines.

A steering committee is strongly advisable in any process that will result in selecting and implementing information resources. When competition exists for limited information resources, budgets and staff, the committee will have the important task of determining project priorities. Furthermore, it will be responsible for requiring and encouraging the participatory interaction between end users and the central information resources department that is essential for the success of information systems projects.

The steering committee should be composed of senior and line management representatives who have visibility at all levels of the company. Since the information systems and services under consideration may have an impact on the achievement of organizational objectives, projects must be carefully defined and given priority relative to their impact on those goals.

A steering committee may have six to eight people, including, for example, the chief executive officer, the vice-presidents of finance, production and sales, and the central information resource manager. As a group, they should reflect the organization's personality and goals.

Depending on the organization's size, the chief executive may chair the committee; another senior executive may act as chairman if the chief executive focuses principally on external activities. Other organizations may appoint the chief financial officer or even the central information resource manager.

Having the information resource manager chair the committee may not be preferred, since this may give the impression that the committee is serving only the more narrow role of a sounding board for his department. Some organizations have the information resource manager take the minutes of the meetings. This allows him to be aware of the tone of the committee and to maintain a detailed understanding of its concerns.

Other department representatives may be called upon by the committee as deemed necessary and may or may not become permanent members. As a particular project gets into later stages, usually past the priority phase, the committee may decide that line managers and supervisors from the departments directly affected by the project should become ad hoc or advisory attendees of the committee meetings.

For example, a small town might establish a steering committee composed of the town administrator, town clerk, town accountant, the current information resource manager and two citizens with strong systems experience. If the committee is recommending the automation of town water and property billing, it might ask the town engineer and the assessor to become ad hoc attendees of committee meetings until those projects have been concluded.

The mission

The primary mission of the steering committee is to guide the use of information resources in the organization, including the central information resource department, staff, budgets and time. For companies with established information resource departments, this mission may mean maintaining a long-range information systems plan. The committee



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may establish priorities and direction for the central information resource manager.

As users become more sophisticated, project requests usually increase. The central department cannot satisfy them all and, without the committee, will frequently be under pressure to begin or rush projects.

The evaluation of information staff requirements and the user's commitment to a project vs. the potential dollar savings and services is another committee responsibility. Projects considered by the committee for automation are given priority according to existing information department work loads and resources, as well as organizational goals.

This ranking of major information resource projects by the committee is an assumption of an important responsibility formerly associated with the central information resource manager. Committee representatives from the areas under consideration know about the proposed systems and services and can put into perspective their department goals vs. the company goals. The committee member who represents a department with a priority application acts as a liaison with the information resource function and takes responsibility for managing the appropriate commitment and interaction through the user information resource manager.

Organizations selecting company-wide information systems applications may have the committee participate in the vendor and software selection process. Some companies

Steering committee members must be well-versed not only in their individual departmental objectives but in overall company goals. And considering the need for their expertise, members should not delegate their responsibilities to junior staff.

may give the steering committee complete responsibility over the selection and control of all information systems applications, whereas others might use the committee as a sounding board or advisory body. In any case, the committee's mission and the role of each member should be made clear and agreed upon from the outset.

The members of the steering com-

mittee must represent the best blend of experiential and academic knowledge available. They must be well-versed not only in their individual departmental objectives but in overall company goals. They must be experienced in managing their organization, and they must have a conceptual understanding of management principles and basic information systems theory.

Considering the need for their expertise, the committee members should not delegate their responsibilities to junior members of their staff. For the committee to serve its mission, it must have the commitment and personal involvement of each member. It is the responsibility of the chairman to see that the members maintain the committee's purpose and do not digress from their assigned roles.

Dodging problems

The steering committee should not be set up to manage the central information resource department, nor is it the channel through which that department's manager reports. He answers to the chief executive.

Further, the committee should not be involved in the details of the information resource department. For

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Using a steering committee to provide end-user interaction can produce a synergistic effect: greater commitment from both the users and the information resource department.

Instance, it should not determine whether additional memory is required or what model disk is best for a specific situation. The roles of the information resource manager and the committee must be clearly delineated.

Individual members may not always make the committee aware of the view of users they represent. This can hinder the selection and implementation process and ultimately result in project failure.

If people with limited decision-making responsibility are on the committee, they may not have the ability to respond appropriately for the areas they represent. Thus, user conflicts can occur after a decision or recommendation has been made.

Next, the self-interest of members may make it difficult for the committee to arrive at a consensus of what is best for the overall organization. Efforts to get the committee to make a decision

may be futile, or the final decision may reflect only the interests of the "strongest" member. This and other factors may cause an extended amount of time to pass without a decision or recommendation. The chief executive who feels a decision should have been made may not wait, preempting the responsibility of the committee.

Another pitfall: these committees sometimes waste time on concerns outside their scope.

These potential problems may dictate an approach where decisions concerning information resources are made solely by the chief executive and the central information resource manager. Prior to using the steering committee approach, any organization should recognize and address the pitfalls. It should be clear that selecting the right people for the committee is essential.

Finally, using the steering committee approach as a means of providing end-user interaction can produce a synergistic effect: greater commitment from both the users and the information resource department. This effect can be enhanced when users participate in all phases of strategic planning and systems development. It will result in renewal of the systems mystique for users and promote an understanding and concern for success between both groups.

Cooperation between these two groups, involvement with each other's needs and problems and the acceptance of a policy of joint accountability for information resource project success or failure are attitudes and experiences that must be demanded and encouraged by senior management.

About the authors

Stephen Priest has been director of information resources at Brockton Hospital, Brockton, Mass., for the past 10 years. He is on the graduate faculty of Northeastern University and the undergraduate staff of Stonehill College in North Andover, Mass. He is currently working on a book about information resource management.

William Norho is assistant director, systems and data processing, at Eastern Utilities Associates, Boston. He is also a part-time faculty member of Stonehill College.



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COMMUNICATIONS

The office strategy that IBM built

By John H. Cioffi

If IBM's proposed merger with Rolm Corp. goes through as planned, Big Blue will have added a critical missing piece to its office strategy: voice systems that also support data.

That strategy already includes, among other things, a building wiring scheme that provides voice and data outlets within every office of a corporation, cluster networks for IBM Personal Computers and a yet-to-be-officially announced premises-wide network to provide for the sharing of computer system resources.

Additionally, IBM holds a 60% interest in Satellite Business Systems (SBS), a communications carrier that offers private and public voice and data services.

True-blue customer

If a true-blue customer bought — hook, line and sinker — the products and services of IBM, Rolm and SBS, after surviving a joint sales call with representatives from the three companies, the resultant system might look like the one depicted in the diagram.

In this scenario, the building has been wired from the ground up using the IBM Cabling System. The main components of this system are distribution panels found in the wiring closets of the building and a master wire distribution panel in the

basement next to Rolm's private branch exchange (PBX) and IBM's host CPU.

Twisted-pair wires — separate pairs for voice and data — are run from the patch panel on each floor to the outlets in each office of the building. The panels, in turn, are wired together and are individually cabled to the master distribution panel in the basement. The PBX and host computer are also wired to the master panel, as well as wired together. All voice and data connections, therefore, are handled by the Cabling System, but only in one example of voice and data signals actually share the same wire.

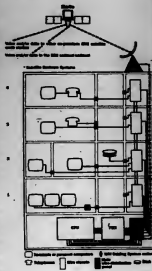
That case is depicted on the fourth or top floor. Here, an account manager has his asynchronous terminal plugged into the RS-232C interface in the back of his Rolm phone. He can be speaking on the phone while using his terminal and the protocol conversion capabilities of the PBX to access a 3270 application running on the IBM host.

Wired directly to host

On the third floor, a programmer has his IBM 3275 display terminal wired directly into the host computer with the Cabling System instead of patched through the PBX. Each outlet is wired with separate voice and data wires.

If our programmer was demoted for

See IBM page 56



Not-so-bright future seen for bypass links

PARAMUS, N.J. — Bypass technology will grab a surprisingly small share of the local loop market in the next six years, according to a study by the Perspective Telecommunications Group, located here.

The inability of long-distance carriers to offer coherent strategies, the limited local distribution capabilities of private network vendors and the confusion surrounding the impact of divestiture on users were cited as key reasons for the apparently slow growth of bypass in intracity communications networks (ICCN).

"When we initiated the study we expected alternatives to fare better as a result of technological improvements such as second-generation digital termination services, repackaged 18-GHz microwave and reduced-channel bank costs. However, in the final analysis, the realities of market-

See BTTPAGE page 97

Stratus offers SDLC support

WASHINGTON, D.C. — Stratus Computer, Inc., the Marlboro, Mass.-based manufacturer of IBM-compatible fault-tolerant systems, has announced a Synchronous Data Link Control (SDLC) protocol that enables its Continuous Processing System to function as an IBM Systems Network Architecture (SNA) device.

The Stratus SDLC protocol software, Stratus SNA software and the Stratus SNA 3270 terminal emulation software were among several communications products that Stratus introduced at the recent Federal Computer Conference here.

Used to transmit data over communications lines in a SNA network, the Stratus SDLC protocol corresponds to the IBM SNA link layer, the vendor said. The SDLC protocol may be pur-

chased separately by users requiring only SDLC bit-synchronous protocol support and is priced at \$5,000.

Stratus SNA reportedly corresponds to the path control, transmission control and presentation service layers of the IBM SNA model. It also provides a Stratus system connection to SNA networks as a Type 2 physical unit and supports Type 2 (IBM 3275 terminals) and 3 (IBM 3280 printers), logical units, according to Stratus.

The price for Stratus is \$10,000. It will be available in the first quarter of 1985.

The Stratus SNA 3270 terminal-emulation package is said to emulate the IBM 3270 Information Display system, enabling any Stratus-supported terminal to appear to an IBM host as an IBM

See SDLC page 97

Paradyne Corp. recently unveiled a slew of products, including a network controller, an X.25 gateway product for Systems Network Architecture and a 16K bit/sec modem/BB.

American Satellite Co. has announced that it has signed a contract with Sears Communications Co. for the development and installation of a private video teleconferencing satellite network/BB.

Federal Express Corp., recently named Har's Corp. and Tandem Computers, Inc. as contractors for a network to support its Zapmail service/BB.

Northern Telecom, Inc. has announced a series of products and enhancements for its SL-100 private branch exchange, including the ability to support switched 3270 traffic/BB.

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COMMUNICATIONS

Banyan Systems introduces virtual networking server

WESTBORO, Mass. — Banyan Systems, Inc. has introduced Vines, a virtual networking server that can operate multiple mixed communication network cards such as Ethernet, Apple Computer, Inc. Applebus, synchronous, asynchronous and IBM Synchronous Data Link Control.

The heart of Vines is the Banyan Network Server, which features a Motorola, Inc. 68000 microprocessor; 512K bytes of random-access memory, expandable to 3M bytes; 43M to 160M bytes of hard disk storage; a 60M-byte tape drive; battery backup; and a six I/O expansion slot bus that accepts boards designed for the IBM Personal Computer, according to the vendor.

Vines uses an AT&T Unix System V operating system with improved file handling and intelligent communications support, Banyan Systems said. The software handles file service, printer service, communications and information retrieval.

The Banyan system consists of three elements: front end, back end and services. The front end reported-

ly allows the user to connect multiple types of local-area networks. The back end is said to provide protocol support for communications to host mainframes, larger systems and public data networks. A key support element is StreetTalk, a distributed naming and directory system that allows users to locate and access services and devices independently of their locations on the network.

Prices for Vines range from \$16,900 to \$40,000.

Banyan Systems is headquartered at 155 Flanders Road, Westboro, Mass. 01581.

Agridata goes worldwide

MILWAUKEE — Agridata Resources, Inc. (ARI), which operates the Agridata Network on-line videotext service for the agriculture industry, has announced plans to expand its agricultural information and communications services worldwide.

The Agridata Worldwide network will provide international and national farm news, financial information, weather services, cash and futures markets, commodity information, market analysis and recommendations, electronic mail and educational services, according to a spokesman. The network is now available in the U.S., Canada, Australia and New Zealand and will reportedly be running in the UK this month.

The procedure for securing international service to the worldwide network varies according to user locations, the vendor explained. The subscriber's microcomputer or data terminal makes a dial-up connection to either a domestic public data network or telecommunications carrier. The data networks or carriers are interconnected by international record carriers which connect users to Agridata Network/Uninet, ARI said.

To arrange for connection, users may contact the local postal, telephone and telegraph administrations. Costs are based on access time. Further details are available from ARI at 830 E. Kothman Ave., Milwaukee, Wis. 53202.

Telecom service targets on-net capabilities

OAK BROOK, Ill. — Dana Telecommunications Corp. has announced a high-capacity telecommunications service emphasizing on-net capabilities for switched voice and data transmissions.

The Damacom service, designed for high-volume business applications, is based on the telecommunications system the company purchased from International Harvester Co. and is designed with Rockwell International Corp. digital common-carrier switches.

Damacom is said to feature centralized trouble reporting, telemanagement, call detail analysis, second incremental billing, optional customized directory assistance and optional customized reporting.

Network access is \$60/line/month within 10 miles of a Damacom switching site, \$100/line/month within 20 miles of a switching site and at standard telephone company access line rates in excess of 20 miles. Installation charges are \$175/line. Minimum usage is \$360/line/month with an initial minimum order of three access lines.

Services are priced according to three rate structures: Damacom-1, servicing Chicago, Memphis, New York, Philadelphia and San Diego, for 17 cents a minute day, 12 cents a minute evenings and 8 cents a minute nights and weekends; Damacom-2 (on-net), a bonded WATS-type service originating in any of the Damacom-1 cities; and Damacom-3 (off-net), reaching all other serviced locations.

More information is available from Dana Telecommunications, which is located at 1300 Kensington Road, Oak Brook, Ill. 60521.

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VU-TEK is the result of research by American Hoechst Corp., a member of the Hoechst Group of companies, with worldwide sales of \$14.5 billion, and annual research expenditures of over \$630 million.

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COMMUNICATIONS

Paradyne communications products hit marketplace

Offerings include network controller, X.25 packet assembler/disassembler, modems

LARGO, Fla. — Paradyne Corp. has announced a series of communications products. This series includes a network controller, a Systems Network Architecture (SNA) X.25 packet assembler/disassembler, a 16K bit/sec modem and a series of diagnostic modems.

The DCX Network Supervisory Controller (DCX/NSC) reportedly was developed to consolidate the diagnostic and configuration capabilities of Paradyne DCX multiplexers into a single controller.

According to the vendor, the DCX/NSC provides functional control and monitoring of all data channels in a network and operates in a network with at least one DCX 860 multiplexer supporting up to 240 local channels and 15 network links.

The DCX/NSC reportedly consists of a controller, CRT, printer and RS-232 interface unit. According to the vendor, maps can be established at a central site and downloaded to a network node.

IBM-compatible diskette

The controller is said to record network events on an IBM-compatible diskette. It is priced at \$18,000 and is available 60 days after receipt of order.

The PDN5220 is an X.25 multipoint packet assembler/disassembler designed as a gateway between IBM SNA users and X.25 packet-switching networks, the vendor said. It offers transparent communication between remote SNA device clusters and SNA host processors, Paradyne said.

The packet assembler/disassembler reportedly performs automatic call setup, packetizing of SNA path information units, local polling of remote devices and flow control. It is said to support standard error recovery procedures for each protocol and detect and recover from modem failures.

It is available with two, four, six or eight ports with IBM SNA/Synchronous Data Link Control (SDLC), IBM 2780/3780, bisynchronous and asynchronous protocols, according to the vendor.

A typical four-port PDN5220 supporting three SNA/SDLC clusters costs \$6,500 and is available 60 days after receipt of order.

The Challenger 16.0 is a 16K bit/sec modem based on a single circuit card, allowing for high-density nest mounting. According to the vendor, it can be stored in groups of 12 modems in a 194-in. nest to conserve data center floor space.

Also available as a stand-alone unit, the Challenger

16.0 has fallback speeds of 14.4K bit/sec, 12K bit/sec, 9.6K bit/sec, 8K bit/sec and 7.2K bit/sec. According to the vendor, it is capable of initialization in 253 msec and provides an 11-msec throughput delay.

The Challenger 16.0 is priced at \$8,300 and is avail-

able now, Paradyne said.

Paradyne VHS/MPX

The Paradyne VHS/MPX series includes three modems with rates ranging from 14.4K bit/sec to 19.2K bit/sec with network management capabilities and integrated time division and statistical

multiplexers.

The modems are said to operate on standard voice-grade lines and to interface with a variety of teleprocessing facilities. They are based on multiple-processor architecture working with a very large-scale integrated signal processing chip set.

Pricing for the modems is \$10,200 for the VHS 14.4, \$11,500 for the VHS 16.0 and \$12,900 for the VHS 19.2. They will be available in early 1985.

For more information, Paradyne is located at 5550 Umatilla Road, Largo, Fla. 33540.



Sears gains network contract

ROCKVILLE, Md. — American Satellite Co. has signed a contract with Sears Communications Co. to establish a private voice, data and video teleconferencing network.

The network reportedly will connect the corporate and subsidiary offices of Sears Communications' parent company, Sears Roebuck

and Co., in 36 U.S. cities, making it the largest private satellite network for full-motion video teleconferencing, according to American Satellite.

Sears' Allstate Insurance Co. subsidiary will reportedly be the first teleconferencing user.

In addition, Sears will use American Satellite's National

Network facilities for intra-company voice and data communications and will resell telephone services to other business users.

Sears and its subsidiary companies are expected to begin using the national network immediately.

Allstate's video teleconferencing service is expected to begin by July 1985.

Harris, Tandem to build satellite net for Zapmail

Federal Express Corp. has named Harris Corp. and Tandem Computers, Inc. as contractors for the first phase of a satellite-based data communications network designed to support Federal Express' Zapmail service.

The network is scheduled to replace a terrestrial sys-

tem servicing 16 cities in July 1985.

The satellite-based network will carry Zapmail, a mail service where documents are electronically delivered to distant Zapmail facilities centers for hand delivery within two hours.

Net equipment

The network will comprise Harris satellite group equipment, Tandem network interface products and Tandem Nonstop TSP computers. The computers, supplied under a separate contract, are already in operation.

Harris officials said they will supply earth stations utilizing Ka-band communications technology and its proprietary Delta Gain six-meter antennas.

Tandem's proprietary satellite communications interface equipment will reportedly link the earth stations to the Tandem computers.

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COMMUNICATIONS

NCR Comten enhances software for Comten X.25 interface

SAINT PAUL, Minn. — NCR Comten, Inc. has announced software enhancements for its Comten X.25 interface.

Comten X.25 Release 4 is said to include a packet adapter, FANDEP, which supports the IBM 3270 bi-synchronous protocol and the TIA1, a terminal interface adapter supporting asynchronous terminals.

The new release also supports Comten Communications Networking System (CNS) in conjunction with packet-switching networks.

It reportedly provides host-side packet assembly/disassembly of the 3270 bi-synchronous protocol, en-

abling terminal users to connect to packet-switched networks and access IBM Systems Network Architecture (SNA) and pre-SNA host applications.

The TIA1 interface adapter reportedly enables asynchronous terminal users in a packet-switched network to access hosts connected to a Comten 3600.

Licence fees, in addition to a base fee of \$300 per month or \$3,500 annually, and a \$48 monthly or \$528 annual fee, depend on the modules chosen.

Comten is located at 2700 Snelling Ave. N., Saint Paul, Minn. 56115.

Digital Products introduces smart local net exchange

Said to connect from four to 48 computers

WATERTOWN, Mass. — A smart local-area network exchange that is said to connect from four to 48 asynchronous computers and peripherals was introduced by Digital Products, Inc.

The Digital Netcommander is a 16-port turnkey unit that is said to provide port contention management, terminal switching, printer sharing and message store and forward. The unit can be linked for expansion and can be a server in a larger local-area network.

According to the company, port names are user defined, routing is said to be automatic and contention paths can be permanently established without the need for special access codes.

The product is priced from \$1,005 to \$2,950, depending on configuration.

More information on the Digital Netcommander is available from Digital Products, which is located at 600 Pleasant St., Watertown, Mass. 02172.



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FCC launches investigation into APS network rates

WASHINGTON, D.C. — "Market projections are not an acceptable basis for determining the rates for a new service," the Federal Communications Commission said last month in launching a nine-month investigation of Accunet Packet Service (APS), AT&T's controversial packet-switched network offering.

The commission has allowed AT&T to begin offering APS because the tariff is not "unlawful on its face," but the implementing order directs AT&T to explain how it can charge only 82 cents for an Accunet kilopacket when it previously charged \$1.35 for a Basic Packet-Switching Service (BPS) kilopacket.

AT&T's original explanation was that anticipated market growth would allow this reduction.

Pay less, receive more

The FCC pointed out that Accunet customers not only pay much less, but also receive much more service than BPS customers.

The latter offering consisted only of packet switching, while the former includes transmission, plus switching.

Competing vendors, which charge roughly twice what Accunet does, maintain AT&T's rates are that low because they are being cross-subsidized.



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COMMUNICATIONS

Northern Telecom unveils PBX products, enhancements

NASHVILLE — Northern Telecom, Inc. has announced a series of products and enhancements that include compatibility with IBM data communications protocols for its SL-100 digital private branch exchange (PBX).

Designed to eliminate the need for coaxial cable, one feature allows switched access to IBM 3274 and 3276 controllers from IBM 3270 terminals over twisted-pair wiring. It reportedly lets the terminals access multiple host computers and data bases. The feature has a suggested list price of \$745 per terminal and \$665 per controller port, the vendor said.

The Asynchronous/Synchronous Interface Module (Asim) is said to

permit asynchronous and synchronous terminals such as the IBM Personal Computer, IBM Displaywriter and Xenix Corp. 560 to communicate with various data bases through the SL-100.

Asim is intended for SL-100 customers who want to operate their data terminals alternately in the synchronous and asynchronous modes.

A stand-alone module, the Asim provides a single RS-232C interface for synchronous and asynchronous terminals, thereby eliminating the need for modems in local-area networks, the company said.

The price for the Asim, to be available in December, is \$465, the company said.

The vendor also announced an IBM 3270 protocol conversion unit that permits most Asiac asynchronous terminals to operate as IBM 3178- or 3278-type on-line terminals. A single unit attached to the SL-100 connects up to seven asynchronous terminals to various hosts. It is priced at \$6,400 for a seven-terminal unit.

The SL-100 System 36 Gateway is a protocol converter used to allow Asiac asynchronous terminals to be IBM System/34-, 36- and 38-compatible. The terminals reportedly communicate through the SL-100 network with IBM System Network Architecture/Synchronous Data Link Control protocol capabilities.

The SL-100 PC Interface Card was designed to let the IBM Personal Computer and Personal Computer XT communicate in digital format with the SL-100 via twisted-pair wiring. Designed to plug into the personal computer, it has a wire that plugs into a standard telephone jack for connection to the SL-100 and access to local and remote terminals, other computers and data bases. The card costs \$195.

The Asynchronous Interface Line Card is said to allow connectivity of the PC Interface Card and other asynchronous RS-422-compatible devices to the SL-100 system. It costs \$200.

The X.25 Gateway unit connects to the SL-100, reportedly enabling Asiac terminals to communicate through the SL-100 with public or private packet data networks. A unit allowing up to 16 simultaneous connections costs \$875 per connection, according to the vendor.

The Computer-to-PBX Interface (CPI) is a feature that can be incorporated in the SL-100 system to allow data communications over telephone wiring or other transmission media using the T-carrier 1.544 Mbit/sec transmission-rate standard, according to the vendor.

It costs \$5,000.

The CPI will be available in the second quarter of 1995 and the other products in the third quarter of 1995.

More information is available from Northern Telecom, located at 259 Courtland Bend, Nashville, Tenn. 37228.

CONTROLLERS

NOC CORP.
Model 440

Noc Corp. has announced a communications interface designed to allow up to 16 asynchronous devices to access X.25 packet-switched networks or host computers.

The lost 440 Asynchronous X.25 Pad is said to feature an X.25 network/host interface that operates at speeds up to 56K bit/sec. Dual X.25 links are available as an option, according to the vendor.

Password security is provided for configuration control, incoming calls and closed user groups, according to the vendor. Network control commands reportedly can be executed from any terminal port or from a network control center via the X.25 Pad.

The lost 440 is based on an Intel Corp. 8086 microprocessor using direct memory access methods to improve throughput and features auto-connect, permanent virtual circuit capabilities and user-defined function keys, according to Noc.

It is said to conform to all CCITT X.3, X.21, X.25, X.28 and X.29 standards and to be certified for use with the GTE Teletel Communications Corp. network.

The product is available in four-, eight-, 12- and 16-port versions and is priced at \$2,600, \$3,445, \$4,195 and \$4,945, respectively. A second X.25 link port costs \$500, according to Noc.

Noc, 630 Monte Ave., Mountain View, Calif. 94039.

See ENR 10 page 96

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COMMUNICATIONS

IBM from page 25

writing some terrible code and moved into the rooftop office next door, the building operations personnel could plug his terminal into the outlet in the new office and wrap the patch cord on the distribution panel to correspond with that office, leaving his logical address the same.

On the third floor, a number of group supervisors have 3270 Personal Computers wired together using the everything-but-announced token-ring local network to share a hard disk. Each supervisor has plugged his computer into his respective data outlet, which is connected to a wiring concentrator (not shown) in the wire closet. The wiring concentrator, in effect, connects the devices in series (assembles them in a ring by joining their hands) and is itself connected to the patch panel.

When devices want to communicate they ask for a token, append their data to it and pass it off to the device holding, for example, its left hand. That device examines the address of the token and if it is not its own, passes it on to the next device and so on. Ultimately, the token will be routed through the patch panel either to the host in the basement or to other floor, depending on the number of devices that the user wants to support on a single ring. According to IBM, 200 is a good maximum.

On the first floor of our customer's building, strategic planners have interconnected their Personal Computers using the recently announced PC Net. Each one of these mid-split broadband nets can support up to 72 Personal Computers. In this example, the customer is using a yet-to-be developed gateway (that black box) to interconnect the network with the mainframe using the Cabling System.

Last, but certainly not least, our customer has had it with private-line order delays and AT&T divestiture and jumped at the chance to have SRS install a private satellite antenna on the roof.

Using this, he can send both voice and high-speed data directly to the rooftop of his similarly equipped branch office in Cleveland.

Improbable? Yes, but a possible scenario of how the pieces IBM is assembling may fit together.

UNITS from page 24**TIMEPLEX, INC.****Enhanced Microplexer MX.35 PAD**

Timeplex, Inc. has announced an X.25 packet assembler/disassembler (PAD) designed to provide flexibility, convenience and security in packet-switched nets.

The Enhanced Microplexer MX.35 PAD is said to offer two options to manual-

ly entering the network address, which can be up to 15 digits. Mnemonic calling reportedly allows a terminal operator to reach a specific computer by typing in a single word, while autoconnect allows dedicated terminals to reach the same ports repeatedly by establishing a virtual circuit connection.

An MX.35 PAD with four ports starts at \$2,500.

Timeplex, 409 Chestnut Ridge Road, Woodcliff Lake, N.J. 07675.

INFOTRON SYSTEMS CORP.**Infolinx.25**

Infotron Systems Corp. has announced an X.25 packet assembler/disassembler to provide Ascl terminals with access to packet-switched data networks.

According to the company, the Infolinx.25 connects up to 16 asynchronous devices with one or two X.25 networks or host computers. It includes two 56K bit/sec

links, and can be configured to meet a variety of network requirements, the company said. Users can specify a number of channels, channel speeds, packet sizes and independent port speeds.

The X.25 network link is said to operate on a standard RS-232C interface or on a long-distance, high-speed RS-422 interface. Prices start at \$2,700 for four channels.

Infotron Systems, Cherry Hill Industrial Center, Cherry Hill, N.J. 08003.

"I RELY ON AST FOR



COMMUNICATIONS

**SDLC** from page 85

3278 device. This software package will be available in the first quarter of 1985 and will be priced at \$1,500.

Three communications packages

Stratus also introduced three communications packages aimed at the financial and retail markets, where its fault-tolerant computer systems are targeted. Stratus announced it can support the Swift protocol for international electronic funds transfer, a Poll/Select protocol used in automated teller machines manufactured by Burroughs Corp. and NCR Corp. and the Visa protocol for the connection

of Stratus systems to the general-purpose Visa electronic funds transfer network.

In addition, Stratus introduced a Model C100 communications controller, priced at \$7,500, which reportedly accommodates all Stratus line adapters and allows the user to select a mix of line adapters. It also unveiled a C100 Smartsync line adapter required to run SNA, T-20 and other high-level communications. It is priced at \$1,000. A C110 Smartsync line adapter that was also introduced is said to be used to connect a variety of asynchronous devices such as those used in shop floor control. It is priced at \$1,000.

Stratus Computer is located at 56 Fairbanks Blvd., Marlboro, Mass. 01753.

BYPASS from page 85

place confusion and frustrated vendor responses proved to be the major obstacle," observed Brad O'Brien, Perspective Telecommunications' vice-president of research.

Bypass will account for 3.5 million circuits, 5.9% of the \$7.9 million nonresidential payoffs in 1990, according to the study. In terms of revenue, the bypass market by then will amount to \$1 billion out of a total of \$27.9 billion.

O'Brien added that local telephone companies have demonstrated a high degree of responsiveness to bypass by moving to cost-based services and by suggesting existing facilities with digital technology such as subscriber loop carrier and fiber subscriber loop carrier. He said that by 1990 three technologies should stabilize the local telephone companies' positions. "There is no technology on the horizon which can compete with properly priced [telephone company] services," he added.

The study, conducted during the summer of 1984, involved on-site and telephone interviews with 80 users, 45 vendor representatives and eight state and federal regulatory agency officials. It was designed as a follow-up to a similar 1983 study.

The study found that the telephone companies' pricing in the intricacy market and new technologies offered by new competitors are driving some customers away from the former Bell system companies. It said that these companies will lose market share throughout the 1990s, with the lost business peaking at about 5%.

But by the late 1990s, the local telephone companies' technologies, particularly fiber-optic technology, will be at a point where the companies will be competitive for essentially all intracity applications, according to the study.

Other findings included:

■ By 1990, excess local transmission capacity will be available in most major metropolitan areas.

■ Network management and control equipment on the customer premises will be the long-term ICN opportunity.

■ Alternative ICNs will never address 100% of an establishment's external communications requirements.

■ Organizations usually implement alternative ICNs as part of a larger system, not primarily for reasons of bypass.

The study, "Intracity Communications Network-II" is available for \$6,500 from Perspective Telecommunications Group, 15 Prospect St., Paramus, N.J. 07652.

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Working IBM® PCs into the world of large computers used to be quite a headache. But now that we've discovered AST and their full line of proven communication products, things are much easier.

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SYSTEMS & PERIPHERALS

Mainframe use to explode?

By John Deemant
CW Staff

MOUNTAIN VIEW, Calif. — If one IBM 3084 mainframe is capable of handling all the arithmetic needed to process payroll for every worker in the U.S., why are so many mainframes out there?

Because so much mainframe capacity is expended running operating systems, software and data base management systems, according to a recently released report on large-scale systems directions from the computer software and services market research firm Input, Inc., based here.

While the report, titled *Large-scale Systems Directions: Mid-year Update—1984*, questions the trend in some instances, the authors conclude the trend toward large host systems characteristic of IBM's Systems Network Architecture (SNA) is "highly appropriate." Further conclusions were that large-scale systems will be needed through the 1990s to manage large data bases and provide support for decision-making programs and that data base applications will tend to become distributed because of price/performance advantages offered by smaller CPUs.

Highlights of the report include findings that:

■ Demand for large mainframes is increasing exponentially. The report cites the expected announcements of IBM's Sieria series mainframes in late 1984 and predicts a follow-up announcement of the Summit series in 1988. "The quest for Mips

[millions of instructions per second] seems unending," the report states, adding that IBM's strategy is to preserve the dominant role of large mainframes in its SNA.

IBM software, including the MVS/ESA operating system and the DB2 data base management system, will fuel demand for large mainframes because of the overhead required by the software. Further, IBM's distributed processing strategy is expected to involve linking intelligent workstations to control processors, which will "generate enormous demands for mainframe Mips," the report predicts.

The trend toward large host systems characteristic of IBM's SNA is 'highly appropriate.'—Input, Inc. report

■ Many functions once assigned to software could be more economically assigned to hardware, especially microcomputers. Large mainframes should be used primarily to maintain large data bases and to provide processing power for calculations that cannot be practically performed on minicomputers or micros.

■ Large overhead of IBM operating systems is becoming "an accepted fact of life," but should not be. Users should be more aggressive about achieving more efficient use of processing power through software. "Operating systems have taken on a life of their own," the report states.

■ As IBM turns to protection and security of operating systems, users will be further removed from understanding their system software and less able to improve software performance. "IBM's current trend toward withholding source code is certainly not designed to facilitate understanding."

See STORY page 113

Memorex fixes 3680 disk drive production ills

By John Deemant
CW Staff

SANTA CLARA, Calif. — Nine days after technical problems halted production of Memorex Corp.'s IBM 3380-compatible disk drive, the 3680, the company said defective parts, which reportedly caused head crashes on some users' drives, have been replaced.

A spokesman for Memorex, Geri Plinn, said production of the 3680 was stopped from Sept. 17-30, and shipping resumed on Sept. 27. He said the problems with the Memorex 3680 were related to the coating on the disk platters used in the drive. Plinn said, "Disk components that were out of specification are now being replaced with components that are in specification."

The disk platters are manufactured by Disk Media, Inc. of Westlake Village, Calif., a joint venture of Control Data Corp. and Memorex's parent company, Burroughs Corp. While Memorex announced it would resume production of its 3380-compatible disk drive, CDC announced on Sept. 27 that it was getting out of the IBM-compatible peripheral market. A company spokesman said CDC's 3380 disk drive will be discontinued.

The CDC 3380 series also used disks manufactured by Disk Media.

A spokesman for CDC said the company's decision to discontinue the 3380 and get out of the plug-compatible market was "not occasioned by the current technical problems with the 3380s."

■ IBM has announced it is now producing volume quantities of its 256K-bit memory chips/104

■ Data General Corp. unveiled a workstation which conforms to government Tempest requirements/104

■ A maker of integrated circuit design systems has unveiled a turnkey product that uses a compiler-like software package/106

INSIDE

Turnkey

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Printers/Plotters/110

Stride supermicros out, aimed at OEM market

RENO, Nev. — In its first major product announcement since changing its name, Stride Micro recently unveiled three supermicrocomputers, the Stride 430, 440 and 460.

Aimed principally at OEMs and sophisticated end users, the Stride 400 series is software-compatible with the Sage line of microcomputers manufactured under the company's old name of Sage Computer Technology. The company changed its name when it discovered several other companies in the computer marketplace were also using the name Sage as product monikers, according to William E. Delaney, vice-president of marketing.

The entry-level Stride 430 was designed primarily as a stand-alone system, but it can also be used in a networking environment using a built-in Corvus Systems, Inc. Omninet local-area net, the vendor said.

Standard features of the 430 include a 10 MHz 68000 microprocessor, the VMEbus, 256K bytes of random-access memory (RAM), a 640K-byte 5¼-in. floppy disk drive, four RS-232C serial ports, the Omninet local-area network, Softsch Microarray, Inc.'s Liaison networking software, a Centronics Data Computer Corp. parallel port, 4K bytes of CMOS RAM with battery backup and Softsch's P-system operating system.

A number of other operating systems are also supported including Digital Research, Inc.'s CP/M-68K, Whitenith, Ltd.'s Mdis, Ryan-McFarland Corp.'s RM-COS and AT&T's Unix.

Options include a 12 Mbit microprocessor, a 512K-byte RAM expansion, a second 640K-byte floppy disk

See STORY page 112

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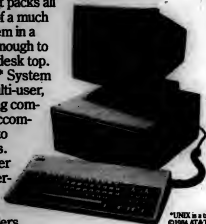
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UNIX

graphics capabilities, an adjustable display monitor, and non-glare screen. Its flexibility allows it to operate as a stand-alone unit or as part of an integrated computer network. And its compatibility allows it to run most popular business software, including most available MS-DOS** applications.

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One big advantage of AT&T Computers is that when there's work to be done, everyone pitches in.

Each family member works together in a coordinated system, making tasks easier

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and users more productive. All AT&T Computers are based on our Information Systems Architecture, an open, communications-based structure that can accommodate and integrate not only our products, but also those of other manufacturers.

Another reason

between terminals, workstations, and computers of all sizes. This local area network allows you to connect departments, buildings, industrial parks, or even campuses. And gives you fast response time and centralized administration and control.

Regardless of the equipment you might own or

UNIX

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SYSTEMS & PERIPHERALS

IBM producing 256K-bit chips for large cache memory units

ESSEX JUNCTION, Vt. — IBM has announced it is now producing volume quantities of 256K-bit memory chips at its semiconductor manufacturing and development facility here.

The chip is used in large cache memory units that temporarily store data being transferred from disk storage to a computer's main memory, such as IBM's recently announced 3090 Models 11 and 23 storage control units, which offer either 8M, 16M or 32M bytes of cache memory, the company said.

The 256K-bit chips are mounted on ceramic substrates 1-in. square, with eight chips on each substrate. The

substrate is enclosed in a metal cover, then attached to a 4-million-char. circuit card for insertion into the storage control unit, which can hold up to eight cards.

IBM said the cost of storing a bit of information has been reduced by a factor of 1,000 over the past 20 years. IBM announced in September 1981 it had fabricated an experimental 256K-bit chip, and earlier this year the company announced it had fabricated experimental 1G-bit chips.

More information is available from IBM, General Technology Division, which is located at Essex Junction, Vt. 05452.

DG launches workstation Dasher D460T meets Tempest standards

WESTBORO, Mass. — Data General Corp. has announced the Dasher D460T workstation with a 18-in. monochrome monitor, detached low-profile keyboard, full-duplex asynchronous communications protocol and an Ascii-standard serial printer port.

The unit is said to meet Tempest requirements. Tempest is an unclassified government term for a series of secret requirements to protect electronic devices from certain forms of radio frequency interference.

Features of the D460T include user-definable screen windows, an extended read-only memory charac-

ter set, a set of editing commands and character graphics facilities, the vendor said.

Other screen features reportedly include a directly viewable field of 34 lines by 81 char. or 84 lines by 135 char. Bidirectional vertical scrolling and 163-char. horizontal scrolling are available.

The D460T is on the federal government's Preferred Products List, the company said.

The terminal supports Ascl and X26.4 command formats, DG command codes, RS-232C and RS-423 interfaces and local printing, including graphics. The D460T also supports DG's AOS, AOS/V8, Edos and the Micro Products Operating System.

The company's Comprehensive Electronic Office software is said to use the editing and screen management features of the D460T workstation.

Prices for the workstation start at \$4,000, the company said.

More information is available from DG, which is located at 4400 Computer Drive, Westboro, Mass. 01580.

HP announces two dot matrix printer models

PALO ALTO, Calif. — Hewlett-Packard Co. has announced two dot matrix printers — the HP 2665A, with a printing speed of up to 600 line/min, and the HP 2566A, with a printing speed of up to 900 line/min.

Each printer may have up to 14 fonts installed at one time, and both can print bar codes, HP said. The standard character set in both printers is 8-bit Roman, which supports Ascii, in addition to 11 European languages at standard 10 char./in., compressed 16.7 char./in. and double-high/double-wide characters, the company said. OCR-A and OCR-B character sets are available as options. The printers can link to HP 3000 and HP 1000 computer systems through the HP-1B interface.

The single-unit price for the 2566A is \$21,766; the 2665A is \$18,766.

HP is located at 1820 Embarcadero Road, Palo Alto, Calif. 94303.

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SYSTEMS & PERIPHERALS

Silicon compilation said to speed VLSI circuit design

LOS GATOS, Calif. — Silicon Compilers, Inc. has announced what it claims is the first very large-scale integration (VLSI) design system to use a language compiler-like software tool called silicon compilation.

The system, Genasil, reportedly allows systems engineers to design application-specific VLSI chips geared specifically to their products, according to Stanley Masor, Silicon Compilers' manager of applications engineering.

Genasil retails for \$545,000 and includes a Digital Equipment Corp. VAX-11/750 superminicomputer that runs AT&T's Unix operating system. It can support up to four users and comes with 4M bytes of main memory, a 450M-byte disk storage system, four-color terminals and system software.

Said to speed design process

Most integrated circuit designers still work in much the same way programmers did before language compilers were introduced, Masor said, separating an integrated circuit design into thousands of separate transistors before reconnecting them individually in what is often a slow and error-prone process. The silicon compilation software reportedly speeds up this procedure, reducing chip design costs and slicing the design process from years to five or six months.

Using silicon compilation, users fill out a menu-driven form that lets them construct

a block diagram of a chip. They receive feedback on interconnection size and speed, which becomes more precise as the level of design detail increases.

According to Masor, the finished design is punched onto a tape that the manufacturer feeds into a pattern-generating wafer machine, producing a prototype, or

mask, of the final chip. Designers can work on four or five chip designs at once, he said, and significant design decisions can be made during the exploratory design phase; decisions that, with contemporary design methods, would have had to wait for actual silicon manufacture.

Three commercially suc-

cessful chips have already been designed with Genasil software, according to a Silicon Compilers spokesman: an Ethernet controller from Beq Technology, Inc., a key circuit in DEC's Microvax minicomputer and a smart chip for monitoring high-resolution graphics displays in a Sun Microsystems, Inc. engineering workstation.

According to figures released by Datapoint, Inc., a market research firm in Cupertino, Calif., the worldwide market for application-specific integrated circuits is expected to explode, increasing from \$5 million in 1984 to almost \$15 million by 1986. Silicon Compilers is located at 105 Albright Way, Los Gatos, Calif. 95030.

TWO TERMINALS IN ONE

NO 1

ASCII

TURNKEY SYSTEMS

VISUAL SYSTEMS CORP.

Viacoscan

Visual Systems Corp. has announced the Viacoscan system for computer-assisted microfilm retrieval. The unit is compatible with Datapoint Corp.'s Attached Resource Computer local-area network and uses Datapoint's Associative Index Method retrieval package for disk access.

Viacoscan uses a microfilm camera with a computer interface and laser bar code scanner to generate a retrieval system index with no manual keyboarding, the vendor said. Datapoint systems running on the RMS operating system, with a 128K-byte minimum main memory and four ports, are needed to support the system.

The price of the Viacoscan software module is \$29,500, and the price of the microfilm camera is \$9,900.

Visual Systems, Suite 3210, 3000 Town Center, Southfield, Mich. 48075.

See TURNKEY page 107

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SYSTEMS & PERIPHERALS

TURNKEY from page 105NELSON ANALYTICAL, INC.
4416X

Nelson Analytical, Inc. has introduced a multichromatograph system built around a Hewlett-Packard Co. HP 9000 desktop computer.

The 4416X features the vendor's Chromware software, which is designed specifically for chromatography applications. Chromware is able to provide the chromatographer with special calculating routines that permit multilevel curve calibration, multireference and internal-standard quantification and separate methods for dual-channel applications.

Other features reportedly include user-programmable sampling rates up to 100 points/sec, method-controllable acquisition and baseline parameters, in sequence auto calibration of standards and complete raw data and results data storage.

The HP 9000 computer utilizes 394-in. floppy disks for either 540K bytes or 1.3M bytes of storage. HP's Thinkjet, an inkjet dot matrix printer/plotter, is included for hard-copy output of chromatograms and reports.

The 4416X is compatible with optional Winchester hard disk drives of 5-, 10- or 15M-byte capacities and can support multiple printer/plotters, the vendor said. Price is \$12,000.

Nelson Analytical, 10081 Hubbard Road, Cupertino, Calif. 95014.

COMPUSCAN, INC.
Laser 3 Formreader

Compuscan, Inc. has announced the Laser 3 Formreader, optical character recognition (OCR) data entry system, said to read electronically documents and forms containing images or data that is typed, machine-printed or hand-printed.

The system reportedly stores the data on magnetic tape for entry into DP systems, eliminating manual keyboarding.

The system consists of a Laser 3 OCR scanner with a vacuum feed transport; editing terminals for corrections, verifications and display of captured video images; and special editing and formatting software. Up to 4,400 single-line documents can be read per hour, the company said.

The basic price for the Laser 3 Formreader is \$72,500.

Compuscan, Building 2, 81 Two Bridges Road, Fairfield, N.J. 07006.

PROCESSORS

GENRAD, INC.
2296 Central Station

Genrad, Inc. has announced the 2296 Central Station, said to support Genrad's Benchmark Component Analysis Network (Bean) software and to link the company's 173X test systems series.

The 2296 reportedly provides monitoring of incoming test processes, off-line program generation, automatic collection of test data and automatic data reporting. It is based on the Digital Equipment Corp. PDP-11/23 with 256K bytes of random-access memory and system software including REXX-11M Version 4.0 with editors and utilities, Genrad said.

The standard 2296 system includes a 65M-byte Winchester disk,

an 8-in. floppy disk, a 180 char./sec serial printer, a DEC VT100 terminal and connector cables. A Scan software license is included in the system's price.

Scheduled for November shipment, the 2296 system, with Scan software, is priced at \$24,900.

Genrad, 207 Traver Lane, Watertown, Mass. 02154.

SKY COMPUTERS, INC.
Sky Warrior

Sky Computers, Inc. has announced the Sky Warrior array processor, which reportedly is able to perform 15 million floating-point operations per second. It is packaged for integration into microcomputer-based systems.

The Sky Warrior reportedly performs arithmetic operations in com-

pliance with IEEE F754 standards for 32-bit and 64-bit data. It is said to offer direct memory access of up to 16K bytes at a transfer rate of up to 30M bytes/sec.

The processor is said to perform a 1,024-point complex Fast Fourier Transform in 3.9 msec. Its arithmetic unit consists of very-large scale integration floating-point devices and bit-slice devices. The Warrior contains an internal 16K-byte, 32-bit cache memory.

The Sky Warrior, initially available on the VME bus, costs \$14,900.

Sky Computers, Post of John Street, Lowell, Mass. 01852.

TELEMATICS INTERNATIONAL, INC.
Series 1H

Telematics International, Inc. has

announced the Series 1H general purpose programmable communications engine, an entry-level version of the company's Series 1 used in the X.25 packet-switching network and Digital Equipment Corp.'s VAX-11 front-end processor products.

The Series 1H supports Pascal, C and a Motorola, Inc. 68000 microprocessor-based assembler. The 1H is intended to provide data communications system designers with the software tools and hardware capabilities to implement communications systems.

Communications capabilities supported include asynchronous, binary synchronous and IBM's High-Level Data Link Control Adapter and Synchronous Data Link Control, the company said.

The Series 1H provides 1M bytes of

Continued on page 110

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SYSTEMS & PERIPHERALS

Continued from page 109

solid-state memory, a 5M-byte removable cartridge disk, a Small Computer Standard Interface I/O interface and a communications processor with channel expansion for up to 64 full-duplex lines with a throughput of 100K bytes/sec, the vendor said.

Prices for the Sarcin III range from \$16,000 to \$26,000, depending on the configuration.
Telecommunications, Port Center, 1416 N.W. 68th St., Fort Lauderdale, Fla. 33309.

TERMINALS

TERM-TROUBLE, INC.
Miracle

Term-Trouble, Inc. has announced

the IBM 3175-compatible Miracle display terminal, based on New Technology, Inc.'s 6802 microprocessor.

The terminal screen offers a 9 by 14 dot matrix, an 80-col by 24-row screen format and an 8K-byte memory, the vendor said. The interface is IBM's 3002A with IBM's 3270 protocol and an 87-key keyboard.

Miracle is priced at \$895.

Term-Trouble, 7408 Trade St., San Diego, Calif. 92121.

GTE COMMUNICATIONS
SYSTEMS CORP.
XT200E Antenna

GTE Communication Systems Corp. has announced the XT200E workstation, with a communication speed that is said to be four times greater than earlier models of the unit.

According to the vendor, the XT200E integrates the functions of a terminal, a speaker phone and a CRT display terminal with editing ability, full-duplex modem, speed dialing and automatic sign-on capability to remote CPUs.

It reportedly can stand alone or be interfaced via RS-232C ports and features an ATAT 212A-compatible modem and transmission speeds of 300 bit/sec and 1,200 bit/sec.

The product has a split-screen feature, up to 16 programmable function keys and a screen editor that allows message composition of up to 23 lines, the vendor said.

The price of the 1,200 bit/sec model is \$1,795, and the price for the 300 bit/sec model is \$1,305, according to the vendor.

GTE, 2500 W. Uptown Road, Phoenix, Ariz. 85027.

NORTHERN TELECOM, INC.
Dialphone Plus

Northern Telecom, Inc. has announced the Dialphone Plus, a combined voice and data terminal said to emulate Digital Equipment Corp. VT100 and VT53 terminals. The product also reportedly features IBM 3101 cursor addressing and Amdt 3.64 cursor addressing.

The Dialphone Plus contains an internal ATAT 212A-compatible autoanswer modem with selectable 300 bit/sec or 1,200 bit/sec transmission rates, according to Northern Telecom.

The product also features a retractable keyboard and meter screen.

Dialphone Plus costs \$1,595.
Northern Telecom, 255 Commonwealth Road, Needham, Mass. 02459.

LASER GRAPHICS, INC.
Rascal compatible with Tektronix, Inc. 4255

Laser Graphics, Inc. has announced that its Rascal color-raster image maker is now compatible with Tektronix, Inc.'s 4255 ink-jet printer. When interfaced to Rascal, the 4255 is said to produce color hard copy at a maximum speed of five min/page and a resolution of 130 dot/in. The Rascal image maker, using a Motorola, Inc. 68000 microprocessor, converts graphics objects from host personal computer software into dot matrix commands to drive color printers at maximum speed and resolution, Laser said.

The Rascal is compatible with the Dixel Systems, Inc. C-150 and the Xerox Corp. 1770 color ink-jet printers, according to Laser Graphics. The Rascal is also said to be compatible with the IBM Personal Computer and can run Lotus Development Corp.'s 1-2-3. The Rascal interfaces to the printer via a parallel Centronics Data Computer Corp.-compatible printer port or an RS-232C serial port.

The price for Rascal begin at \$1,995, the company said.
Laser Graphics, 17771 Cowan Ave., Irvine, Calif. 92714.

PRINTERS/PLOTTERS

PERIX CORP.
Model 900 Magnetic Page Printer

Perix Corp. has announced a non-impact office printer based on a thin-film magnetic recording head, operating at 10 page/min and intended for printing from 2,000 to 10,000 page/min.

The Model 900 Magnetic Page Printer is said to generate 87,000 dot/in. on a magnetically coated drum, which can be in contact with a dry toner as it rotates. The toner adheres to the magnetic images, which are transferred to ordinary paper and heat-fused to produce characters, the company said.

The price of the printer to OEMs ranges from \$2,000 to \$3,000, depending on options and quantities.

Perix, 46571 Wilmet Drive, Fremont, Calif. 94535.

DIGITAL ASSOCIATES CORP.
L-500 hand printer

Digital Associates Corp. has announced the L-500 hand printer system.

Continued on page 112

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	Elapsed Time	CPU Time	IEBCP's	Job Cost
52 cyl. PDS Compress				
Iebcopy	67 min. 18 sec.	12 min. 27 sec.	105,486	\$131.05
PDSFAST	3 min. 23 sec.	8 sec.	712	\$4.22
12 cyl. PDS Copy				
Iebcopy	9 min. 14 sec.	1 min. 20 sec.	10,792	\$18.47
PDSFAST	48 sec.	.7 sec.	122	\$1.75
47 cyl. PDS Unload to Tape				
Iebcopy	58 min.	14 min. 52 sec.	97,253	\$92.05
PDSFAST	4 min. 3 sec.	37 sec.	911	\$5.74
3380 TSO Volume Compress 2,679 individual PDS's				
PDSFAST Driver	11 min. 7 sec.	31 sec.	8,299	\$29.87

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ITT
COURIER

SYSTEMS & PERIPHERALS

Continued from page 110
ton, said to provide 25% more throughput than 600 line/min hand printers and featuring linear free-flight hammers said to eliminate character clipping.

The L-800 features a cartridge ribbon and use of large-scale and very large-scale integration technology for enhanced reliability, the company said. It is available with an optional 65-40 cabinet, said to provide an office space level less than that of a typewriter.

Printer controllers and interfaces are said to provide compatibility with a range of minicomputers and mainframes. The Remote Line Printer System is offered for remote locations with an RS-232C interface and is compatible with IBM 2780 and 2780 communications protocols.

The L-800 printer alone is priced at \$7,100; interface controllers add up to \$2,400 to the price.

Digital American, 1000 E. Main St., Stamford, Conn. 06902.

STRIDE from page 101

drive, a floating-point processor and a memory management unit. The systems are priced from \$2,900, the vendor said.

For medium-size businesses

The Stride 440 can support up to 16 users or peripheral devices and was designed for the small to medium-size business. It features the same basic configuration as the 430, but incorporates a 10M-byte Winchester disk drive and offers 10 RS-232C ports.

Options include a 13-MHz Motorola, Inc. 68000 microprocessor, RAM expansion to 32 bytes, hard disk upgrades ranging up to 32M-byte units, multiterminal expansion to 16 ports, a floating-point processor, a memory management unit, a streaming tape backup unit and a second 640K-byte floppy disk drive. The units are priced from \$8,900.

The top-of-the-line Stride 460 is available with hard disk storage that is upgradeable to 448M bytes. The unit, which uses a standing desk-side processing unit, has the same basic features as the 440. It includes a 16M-byte hard disk drive and a VMEbus expansion card cage.

Options include a 13 MHz microprocessor, RAM expansion to 32 bytes, multiterminal expansion to 22 serial ports, varying configurations of Winchester disk storage, a floating-point processor, a memory management unit and an on-board cartridge tape backup unit, according to the vendor. It is priced from \$8,900.

Stride Micro is located at 4605 Energy Way, Reno, Nev. 89502.

GRAPHICS SYSTEMS

TELEVIS SYSTEMS CORP.

Graphics software and hardware

Televis Systems Corp. has announced a combination of hardware and software that is said to improve the speed and flexibility of its Engineering Design Automation workstations.

The features reportedly

provide two to six times greater speed, a high-resolution monitor, expanded pixel memory, filled-line graphics and color priority, the vendor said.

The 2K-by-2K-byte memory plane option for the Televis Graphics Processor software option allows the product's room and board functions to be performed without delay or flicker, the vendor said. The 1,900-by-900-pixel, 50Hz noninterlaced color monitor is said to

provide flicker-free images.

The Graphics Processor allows pipelined artwork to be done at actual sketch width with filled solid lines, the vendor said.

A T-3000 turnkey system with the above enhancements, Digital Equipment Corp. 5-11 microprocessor and special-purpose graphics processor is priced at \$78,500.

Televis Systems, 31 Alpha Road, Chippingford, Mass. 01524.



SYSTEMS & PERIPHERALS

**STUDY** See page 101

standing or performance improvement the report states. Once IBM really addresses the protection and security problem, the mystery of what the operating system does and how it works will be sealed forever.

Presented operating systems are a mixed blessing. In eliminating the need for systems programmers, they also eliminate the primary source by which users learn to understand IBM hardware and software systems.

■ IBM's corporate strategy is large-mainframe-oriented. Mainframes and stand-alone peripherals account for 65.2% of IBM's gross revenue of \$40.2 billion, the report estimates. However, the report predicts magnetic disk storage will be a key growth area for IBM in the 1980s, and that IBM will attempt to slow the acceptance of optical disk systems that may affect magnetic storage revenue until 1989 or 1995. The major trend of the 1980s, the report suggests, will be toward paper reduction in the office.

■ Limits on growth include unanticipated burdens on host systems as central data bases grow and the probability of "catastrophic" central system failure resulting from demands for data made upon the system.

The full report is available for \$750 from Input, 1943 Landings Drive, Mountain View, Calif. 94038.

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There are some people who wouldn't buy a Rolls Royce for a buck-ninety-five if it didn't come with a hood ornament.

Merely, there are other people: those who purchase things (like computers) because of logic, rather than insecurity.

For those, we offer this chart showing how the Leading Edge Personal Color FXD Computer differs from the IBM® XT, not a self-serving litany of trivial distinctions, but a straight-up comparison of basic things of righteous concern.

After you read it, bear in mind that any consequent action you take requires only admirable lack of cowardice.

	THE LEADING EDGE™ PERSONAL COLOR FXD	THE IBM XT WITH COLOR OPTION
Display	Full color display standard	Color monitor—\$680. Color controller—\$244.
Memory	256K Standard	256K Standard
Speed	716 MHz and 4.77 MHz Standard	4.77 MHz Only
Expandability	Expandable to 640K. No additional boards	Expandable to 640K. Must add two boards
Graphics	Capability Standard	With Color Monitor and Color graphic board
Ports	Both Parallel and Serial Standard	Serial Standard, Parallel optional—\$75.
Expansion Slots	7 slots Standard of which 3 remain open after expansion to 640K	8 slots Standard of which 1 remains open after expansion to 640K
Warranty	One Full Year parts and labor	90 Days parts and labor
Support	Lifetime no charge toll-free hotline Standard. The best in the industry	None on hardware, software optional at \$50 per call.
Service	Nationwide Service Centers	Nationwide Service Centers
Price	\$3,995 Complete (Standard 10 MB Hard Disk Configuration)	\$5,459 Configured as 10 MB Hard Disk

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LEADING EDGE COLOR PC: THE GREAT UNKNOWN

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SOFTWARE DIVISION, 31 HIGHLAND CIRCLE, NEEDHAM, MA 02294. 800-343-3436. (617) 449-4555.

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MICROCOMPUTERS

HP replaces Model 150 with upgraded micros

Features include disk options, ability to swap data with IBM micros

By Jeffrey Berman
San Francisco Staff Writer

SUNNYVALE, Calif. — Hewlett-Packard Co. last week enhanced its original personal computer, the Model 150, with disk system options and additional communications features that reportedly provide expanded ability to exchange data and files with IBM or IBM-compatible micros.

The enhancements, which include an Internet-compatible local networking facility and simplified commands, have prompted HP to replace the Model 150 with two upgraded personal computer models — the Touchscreen Personal Computer and the Touchscreen Personal Computer MAX.

From the standpoint of hardware and user interface, the two follow-on products are identical to the existing Model 150, except for their expanded disk capabilities. The Touchscreen Personal Computer

reportedly comes with two 254-in. microfloppy disk modules, each holding 716K bytes, while the Touchscreen MAX incorporates just one of the flexible disks but adds a 1.44-Mbyte Winchester storage system. HP's original Model 150 supported dual 270K-byte microfloppy modules plus a 1.44- or 5.25-Mbyte hard disk unit, the latter of which has been discontinued, according to Thayer Adams, the company's Touchscreen product manager.

HP also is providing a stand-alone Ethernet disk unit that enables users to swap programs and storage media between the Touchscreen family members and IBM Personal Computers, Adams said.

In addition to boasting enlarged disk capacities, the Touchscreen Personal Computer and MAX reportedly have been enhanced with assorted communications features, including a 3Com Corp. local networking capability that was unavailable

with their HP predecessor.

The local networking facility reportedly now allows IBM and HP micros to be interconnected and to share expensive system resources like disk units and printers. In the past, the Model 150 and IBM's microcomputers were limited to point-to-point communications, according to Bruce Pejlman, a software support engineer with HP's Personal Office Computer Division.

Another communications feature added to the HP personal computer line is the ability to support Advance Link, an enhanced version of the company's existing IBM/Link facility.

Advance Link replaces and is a superset of DataLink, according to Andy Belgum, a product manager with HP's Personal Software Division. Like its predecessor, Advance Link allows the two Touchscreen

See HP page 122

■ Ryan-McFarland Corp. introduces Professional Fortran, an IBM Personal Computer implementation of Fortran-77/150

■ Northern Telecom, Inc. has announced an agreement to market Displayphones with Digital Research, Inc.'s Starfish multitask micro system/310

IBM
Software/150

Project management may become major application

By Paul Kramkowski
Chicago Staff Writer

Alan Kessler, a product manager at microcomputer software supplier Analytica Corp., was forced to fit a square peg — a spreadsheet — into a round hole — his need for a project management package.

"I needed a project management system, so I designed one with Lotus Development Corp.'s 1-2-3," Kessler remarked. "It was a complicated task that involved complex programming and required a lot of time to test. The manager's model, which generated Gantt charts, was satisfactory for simple planning, but ran out of memory when more than 100 tasks were entered."

Kessler ended up trading his makeshift system for TimeLine, a project management system from Breakthrough Software Corp. in Norwalk, Calif. Breakthrough is one of a growing number of vendors gambling on the idea that project management may join WF, data base management and

spreadsheets as a major micro application.

"The market for project management is larger than that for spreadsheets or data bases," claimed Richard Mansfield, director

"The market for project management is larger than that for spreadsheets or data bases." — Richard Mansfield, marketing director, Harvard Software, Inc.

of marketing at Harvard Software, Inc. Putting project management functions on a micro avoids some drawbacks found in the mainframe world, where such software packages have been available for

years without gaining widespread acceptance, another software supplier said.

"Mainframe work is a bureaucratic fashion," said Joel Koppelman, president of Primavera Systems, Inc. in Bala Cynwyd, Pa., project management vendor. "They produce a number of beneficial reports, including status reports, but the user is unable to complete 'what-if' scenarios to determine if there is a better way to schedule a project or handle a problem."

Another limitation to mainframe project management systems is that users must work with complex mainframe software, Koppelman added. "Microcomputers will help project management gain popularity because they are much easier to use than mainframes," he said.

Microcomputer packages have been hampered by memory constraints, according to Breakthrough's Andrew Layman. "Some packages can store only a few hun-

See IBM page 122

English commands integrated in six-function Xanaro package

NEW YORK — Ability, a six-function integrated software package for IBM Personal Computers that will sell for \$495, was unveiled here late last month by Xanaro Technologies, Inc. The package combines word processing, spreadsheet, a data base manager, graphics, telecommunications and presentation functions.

Xanaro President Robert Brynask described the software as an "operating environment" package because it reportedly does not require users to learn operating system commands. The package is "the first operating environment software to integrate common English language commands for all six applications," Brynask claimed.

Ability is said to permit easy access to all applications using one common work space, without the need for window displays. Among

other capabilities, this permits free intermixing of text, spreadsheet and graphics functions when in text mode, Xanaro said. In addition, Ability's selective linking between calls in different applications allows dynamic updating of data, according to the firm.

Ability's spreadsheet also is limited only by memory availability, Xanaro said. The graphics function reportedly produces five types of charts.

Flow of data flow in the relational manager is restricted by disk size, according to the supplier.

Ability also reportedly supports "what you see is what you get" word processing, which includes features such as on-screen display of bold or italicized characters.

The asynchronous communication

See IBM page 121

Suppliers still ignore the basics



SINGAL TALK
Eric Burdick
On line for

Just as in the past, today's most glamorous microcomputer hardware and software developments are targeted at "power users."

In data processing, that's a self-contradictory term. But it does conjure up a definite image: those globe-trotting executives feverishly building spreadsheets (preferably ones with more cells than the average human body) and deciding to raise factories from Singapore to Scotland or across the world supply of some strategic metal.

Over time, the desktop hardware in this image grows more powerful and often bulkier as well — for

example, the new IBM Personal Computer AT is noticeably bigger than the Personal Computer XT. Size of the software programs, meanwhile, keeps doubling dramatically. This year's crop of high-profile business packages combines spreadsheets, data base management systems, graphics, text processing, communications and a host of miscellaneous functions in a monster, all-in-one package such as Lotus Development Corp.'s Symphony or Ashton-Tate's Framework.

These are inspired pieces of software, but most of them were not designed for general consumption. By all accounts, Symphony is like the M-1 tank — fast, powerful, tricky and requiring lots of support. Users say that you can drive head-

See IBM page 122

MICROCOMPUTERS

Financial planning package for IBM micros out from BNA

WASHINGTON, D.C. — Income Tax Spreadsheet, the first in a series of financial planning packages focusing on taxation, has been introduced for the IBM Personal Computer by BNA Software, a division of the Bureau of National Affairs, Inc. Income Tax Spreadsheet, written by a tax attorney and priced at \$495, is said to offer automatic calculation of net tax liability over seven years for all categories of individuals and fiduciaries. Program calculations reportedly include income averaging, alternative minimum tax and automatic indexing.

The software, which requires at

least 128K bytes of random-access memory and two disk drives (one double-sided), is said to provide multiple-year or multiple-case projections simultaneously and the capacity to use multilevel work sheets. Such work sheets permit entry of as much or as little detail as the user prefers without a rigid format, BNA Software said.

Help messages, displaying references to the Internal Revenue Service code, are also said to be included, as are changes of the 1984 tax code.

Additional information is available from BNA Software, 1231 25th St. N.W., Washington, D.C. 20007.

Digital Research, Northern Telecom ink marketing pact

PACIFIC GROVE, Calif. — Digital Research, Inc. and Northern Telecom, Inc. have announced an agreement under which Northern Telecom will sell its Displayphase with Digital Research's Starlink software. The package allows Displayphase users to connect to IBM Personal Computers and share files and software, according to the vendor. Starlink is said to connect four users and allow them access to programs running under either IBM's PC-DOS or Digital Research's CP/M operating system.

Users can transfer data between

Displayphase terminals, according to Digital Research.

Displayphase, a voice/data terminal, reportedly features a 90-number telephone directory, hands-free speech-recognition, automatic log-in, reminder service for appointments and a printer interface for hard copy.

The Starlink-Displayphase system is available for \$1,800 per user.

Digital Research is located at 160 Central Ave., Pacific Grove, Calif. 94063.

Northern Telecom's address is 255 Cumberland Bend Road, Nashville, Tenn. 37226.

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IBM micros get GSA-approved Fortran version

ROLLING HILLS ESTATES, Calif. — Ryan-McFarland Corp. has announced Professional Fortran, a Government Services Administration-certified, error-free, full implementation of Fortran 77 that runs on the IBM Personal Computer line, including the IBM Personal Computer AT.

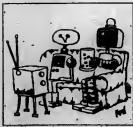
"Our benchmarks show that a Personal Computer AT using Professional Fortran can execute some programs virtually as fast as an IBM 4331 mainframe using (IBM) Fortran," said David McFarland, vice-president at Ryan-McFarland.

The product features Fortran language extensions, object code optimizations, a symbolic interactive debugger and support for arrays of unlimited sizes, according to the vendor. Extensions are said to include symbolic names of up to 31 characters, an INCLUDE statement, industrial real-time Fortran binary-pattern and bit processing functions, Hollerith and hexadecimal constants and mainframe application data types.

Statistical analysis, computer-aided design, analytical graphics and performance graphics are typical Fortran applications, Ryan-McFarland said.

Professional Fortran works with an Intel Corp. 8087 or 80287 floating-point coprocessor.

Professional Fortran costs \$600. Ryan-McFarland is located at 500 Deep Valley Drive, Rolling Hills Estates, Calif. 90274.



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MICROCOMPUTERS

SOFTWARE

SOFTWARE STUDIOS, INC.
Nifty

Software Studios, Inc. has announced Nifty, a desk management system that runs on the IBM Personal Computer.

The program includes an address and telephone file manager, appointment calendar, memo pad, calculator and phone dialer.

The address and phone manager reportedly possesses mail merge capability. The manager also provides an alphabetical phone directory and automatic dialing capability, according to the vendor.

Nifty features a log of system use, on-screen preview before printing, Zip code or record number sorting

and global search by name, firm or record number, the vendor said.

Nifty costs \$75 plus \$2 for shipping and handling.

Software Studios, 6516 Sugarbush, Annandale, Va. 22063.

INTEGRAL TECHNOLOGIES
CORP.
DBXREF

Integral Technologies Corp. has introduced DBXREF, an applications development tool for use with Ashton-Tate's dBase II data base management system. It reportedly runs on the IBM Personal Computer and Personal Computer XT, all machines running Digital Research, Inc.'s CP/M 86 and most systems running Digital Research's CP/M 2.2.

DBXREF assists with the development of documentation and aids in

the debugging of dBase II programs, especially those with a large number of variables, according to the vendor. The software reportedly provides cross-references for the calling program and all subprograms and provides a calling tree and a line-numbered program listing to aid in updates.

Its trace feature is said to permit the selection of specified field, file names or variables for cross-referencing.

DBXREF is priced at \$95. Integral Technologies, Suite 1, 8201 Penn Ave. S., Bloomington, Minn. 55421.

SOFTWARE CONNECTIONS,
INC.
Datastorefile

Software Connections, Inc. has in-

troduced Datastorefile, a menu-driven file management program for the IBM Personal Computer, Texas Instruments, Inc. Professional, Hewlett-Packard Co. Model 160 and the NEC Corp. Decstation.

Datastorefile reportedly offers a built-in report writer and is file-compatible with other members of the firm's Datastore family of data base management systems.

The program is said to create up to 65,000 records per file and 150 fields per record. Calculations that can be performed reportedly include counts, totals, averages and the minimum and maximum number in a data base.

Datastorefile is said to contain a context-sensitive Help facility and a reference facility able to provide the page number for the user manual.

Datastorefile is priced at \$195. Software Connections, 8041 Winston College Blvd., Santa Clara, Calif. 95054.

SOFTWARE ARTS, INC.
TKI Solver for Macintosh

Software Arts, Inc. has introduced a version of its TKI Solver software for the Apple Computer, Inc. Macintosh computer.

Like other versions of TKI Solver, the software reportedly permits iterative problem solving, list solving, automatic unit conversion and the generation of tables and graphs.

The Macintosh version reportedly permits use of the machine's mouse as a pointing device, performs high-resolution plotting and provides answers with 12-digit precision.

TKI Solver for the Macintosh is priced at \$340.

Software Arts, 27 Mica Lane, Wellesley, Mass. 02181.

MAINSTAY
Macman

Mainstay has introduced its Macman software, an assembly language development system for the Apple Computer, Inc. Macintosh computer.

Macman is said to offer an integrated, full screen work environment, including an integrated editor/macroassembler with resource compiler. It is also said to include full macro capability and to permit assembly language programming structures similar to higher order languages. Source code reportedly may be assembled from memory or disk to memory or disk.

According to the vendor, Macman is compatible with the Apple Macwrite software.

Macman is priced at \$100. Mainstay, 28411B Camwood St., Agoura Hills, Calif. 91301.

PERSONAL CAD SYSTEMS, INC.
Cadplan 1.40HR

Personal CAD Systems, Inc. has announced an enhanced high-resolution update of its computer-aided design software for IBM's Personal Computer, Personal Computer XT and Personal Computer AT, running on IBM's PC-DOS 2.0 operating system.

Cadplan 1.40HR is used to create, edit and plot designs for architectural renderings, floor plans, piping, wiring, furniture placement, mechanical design, drafting and graphics-oriented documentation.

Cadplan 1.40HR has increased resolution from 320 by 200 pixels to 640 by 400 pixels and supports high-resolution graphics boards made by Seion

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MICROCOMPUTERS

Corp., Sigma Design, Inc., Hercules Computer Technology and Conagra-plex Corp. — vendors whose boards work with Electrodata, Ltd., Mitsubi America, Inc. and Mitsubishi Electronics America, Inc. monitors.

Other enhancements include note and vertex locking, file, user-definable data base units, cross-hatching and a floor-plan package.

Base price of Cadplan 1.40HE is \$1,300 for new users and no cost to existing license holders.

Personal Cad Systems, 981 University Ave., Los Gatos, Calif. 95030.

DATA BASE DECISIONS Periscope

Data Base Decisions has introduced Periscope, a debugging system for the IBM Personal Computer, Personal Computer XT and Compaq

Computer Corp. systems.

Periscope is said to be a symbolic debugger with a system monitor and a breakpoint switch. It supports assembly, Basic C, Pascal and other programming languages, Data Base Decisions said.

Periscope reportedly includes a memory board for one of the Personal Computer's expansion slots, two push-button breakpoint switches, the debugging software and a 100-page manual. The breakpoint switch is reportedly used to interrupt currently executing programs in order to allow the debugging software to be introduced.

Periscope is said to be command-driven and to preserve the program's screen, even on a one-monitor system.

It is priced at \$295.

Data Base Decisions, 14 Berridge

Lane, Atlanta, Ga. 30326.

LOTUS DEVELOPMENT CORP. Data General/One version of 1-2-3

Lotus Development Corp. has announced a version of the 1-2-3 spreadsheet that runs on the Data General/One portable computer.

Although the DG portable claims to be IBM Personal Computer-compatible, it uses 344-in. diskettes while the IBM microcomputer has 544-in. disk drives. The 1-2-3 for the DG portable is written on 344-in. diskettes, Lotus Development said.

To run 1-2-3, two disk drives and a minimum of 356K bytes of random-access memory are required, according to the vendor.

1-2-3 costs \$406.

Lotus Development, 161 First St., Cambridge, Mass. 02142.

XANARO from page 115

tion application provides standard capabilities such as automatic dialing and also gives emulation of Digital Equipment Corp. VT100 and VT55 terminals, the company said.

Ability's presentation function permits users to develop slide-like presentations.

Other features include on-line context-sensitive Help, the ability to customize up to 50 macro commands and support of the Intel Corp. 8087 mathematical coprocessor.

Ability runs under IBM's PC-DOS operating system and requires 256K bytes of random-access memory, two floppy disk drives, a color card and a color monitor.

Xanaro is located at Suite 815, 321 Bloor St. E., Toronto, Ont., Canada M4W 1G6.

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NCR Comten, Inc.

MICROCOMPUTERS

USERS from page 115

through normal obstacles, but then realize that you don't know where you are.

That's a difficulty with some other excellent all-in-one programs as well. They may be advertised on television or in extensive print campaigns as "perfect for first-time users as well," but that's nonsense. They're often closer to programming tools than they are to general-purpose packages.

This class of software requires a lot of training and support, and it's needlessly complicated for the tasks most people want to do on a personal computer.

Provision of commands

As one illustration, most people working with Lotus' 1-2-3, a much simpler program than Symphony, use only a small fraction of the available commands.

Getting the power of the computer to nonpower users is still the big

challenge.

That's old news, but it requires a lot of painstaking and rather dull work, and it's still rare for vendors to put their best personnel on the job of checking all the little details.

Documentation looking

Look at something as simple as on-disk tutorials. Sometimes all it takes to run these is to put them in the default drive and type a few characters, but the documentation doesn't even tell you that.

Documentation for almost all new hardware and software offerings still abandons you at several crucial points. And an astonishing percentage of new products turns up with major defects or simply does not run at all.

Power users, or anyone else who makes the effort, can overcome these problems. But there's a vast market open to suppliers who provide bulletproof, user-friendly features and follow through on the details.

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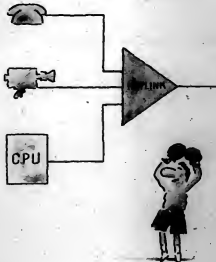
It can handle speeds of 50 bps to 2,048 million bps and transmit voice at low speeds without losing quality or speech recognition.

Because it's software driven, you can change channel speeds and configurations with the touch of a console. Or you can program it to change configurations at predetermined times.

And because it's an advanced time-division multiplexor, it is completely transparent and compatible with all your voice, image and data communications equipment.

So why not give it a shot. You'll discover as others have that for power, speed and flexibility, the DCA Netlink can't be beat.

For more information, write DCA, 303 Research Drive, Norcross, Georgia 30092. Or call toll-free: 1-800-241-5793.



dca
Digital Communications Association, Inc.
DCA Products Are Available Worldwide

MAJOR from page 115

drod tasks in a project," Layman said. "When a project is that small, it would be more economical to use pencil and paper than a micro."

But these limitations will be overcome as more sophisticated microcomputers emerge, other vendors agreed. "Memory limitations were not a serious problem with the [IBM] Personal Computer XT and will be even less of a problem with the [Personal Computer] AT," Koppelman noted.

As memory problems are eliminated, user recognition represents the chief hurdle that project management faces, according to one analyst.

Maureen Fleming, an analyst at International Resource Development, Inc. of Norwalk, Conn., stated that people simply do not buy a micro to run project management software.

"Project management software is designed for someone who has worked with a computer for some time," she claimed.

HP from page 115

models to exchange files with IBM Personal Computers and HP 3000 minicomputers either over phone lines or direct cable connections.

Advance Link is said to support several enhancements that DSN/Link lacked. Advance Link, for example, permits certain communications processes that used to require constant human intervention to be activated automatically at a prearranged time and to run unattended, Seligman said.

The facility also simplifies the process of linking micros to public or private data bases by abbreviating the command sequence needed to invoke the appropriate instructions, he added.

In addition, the firm said that the Touchscreen Personal Computer and MAX can transfer files to an IBM host processor while emulating a 3278 terminal. The Touchscreen Personal Computer and MAX are available immediately, for \$3,495 and \$6,495 respectively.

HP is headquartered at 3000 Hanover St., Palo Alto, Calif. 94304.

COMPUTER INDUSTRY

DEC gears up to market business 'solutions'

By Peter Bartlett
CW Staff

MERRIMACK, N.H. — Digital Equipment Corp., claiming to have departed the "commodity" microcomputer business to focus on offering "solutions," recently unveiled a marketing strategy to coordinate the efforts of resellers, dealers and its own Business Centers.

Executives at DEC's Business Computer Group (BCG) based here acknowledged in a recent interview that the company was swept into a price-competitive, commodity personal computer market for which it was philosophically and strategically unprepared.

BCG was formed this past July to unite DEC's Commercial OEM Group, Small Business Group and the retail operations of the Personal Computer Group. Personal computer responsibilities were reassigned to groups serving the small business, large business and technical markets.

In attempting to compete on retail shelves alongside IBM, Apple Computer, Inc. and IBM clone products, said Ward MacKenzie,

vice-president of BCG, "We weren't successful, and our strategy should have told us we weren't being successful."

John O'Keefe, marketing manager of BCG, said the company failed to recognize the commodity nature of the personal computer retail market. "We never believed we were in a commodity market," he said.

MacKenzie, a 17-year DEC employee, was group manager of DEC's Commercial OEM, Technical OEM and Microcomputer Product Groups prior to assuming his current position, where he still retains responsibility for those other groups.

MacKenzie said the company has refocused its strategy on earlier strengths for meeting business needs, rather than competing in mass markets. "We are less well known in the commodity 'buy-it-off-the-shelf' markets. When we get to the professional market, we are much more known," he said.

According to MacKenzie and O'Keefe, research conducted internally and by commissioned research firms indicates the target

See DEC page 137

■ Press baron Rupert Murdoch brought more than controversy into the U.S. when he moved into the New York Post building. He also brought along an Australian computer company/137

■ Management Science America, Inc. recently found itself involved in a legal dispute with the founder of a company it acquired a year ago/126

■ Conflicting signals from IBM's Boca Raton, Fla., facilities are said to cause confusion among software developers/130

Rolm workers hope IBM buy will not mean corporate hassles in paradise

By Kathleen Barker
CW West Coast Bureau

SANTA CLARA, Calif. — The day after IBM made a \$1.26 billion takeover offer for Rolm Corp., Rolm employees revealed a mixed reaction to the impending merger with the largest company in the computer and information processing industry.

Rolm offers its workers a menagerie of benefits that include whirlpools, steam rooms, tennis and racquetball courts, a full-size indoor basketball gymnasium, a liberal flex-time program and a three-month sabbatical-with-pay after six years of employment. Employees were ques-

tioned about how they think the Rolm culture will fit in with IBM's conservative, button-down corporate image.

"There are a lot of jobs going around the company now about IBM sending over dump trucks to fill in our swimming pool and about a 'white shirt' or 'wing tips' sale going on in the parking lot," said Robert Berger, manager of Rolm's Marketing Literature division. "People are definitely nervous. I think the jokes make them feel better."

Berger said the merger makes sense to both companies because "Rolm's only a

See RESPONSE page 124



RECURRING REPORT

Peter Bartlett
CW Staff Writer

Will anyone meet the IBM challenge?

If the computer industry had any similarity to more established industries such as oil or steel, IBM's proposed acquisition of Rolm Corp. would set off an epidemic of merger mania as would-be competitors scrambled to stay even.

But the nature of the computer industry, and the preeminence of IBM, set this business apart from the Seven Sisters of the oil industry and the rusty titans of the steel business.

IBM, as we have been hearing from John Akers, its president and chief executive officer-designate, is only a \$40 billion company in a \$250 billion business. "The industry dwarfs [IBM]," he has said more than once. How he manages to say that and keep a straight face is yet one more marvel in the mythology of IBM.

Look around this industry and try to find another player that is in the \$40 billion category. There is only one, AT&T, and it is a neophyte in this business; many questions remain as to its

See IBM page 137

FOR VAX USERS

THE RIGHT SOFTWARE FOR SYSTEM RESOURCE MANAGEMENT



Signal Technology's Process Accounting and Chargeback System (PACS) is the leading system resources management software for Digital Equipment Corp's VAX/VMS system configurations.

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COMPUTER INDUSTRY

RESPONSE from page 123

small company with approximately \$650 million in sales that's trying to compete with a \$34 billion giant like AT&T; and IBM needs somebody like Rolm that's a specialist in business communications." Berger said he expected few IBM-mandated changes here.

"Why change something that works? IBM knows we're hot," he said.

Former IBM employee

Jim Cockrum, general manager of Rolm's Network Products division, worked at the IBM Advanced Systems Development division in Los Gatos, Calif., before leaving to join Rolm in 1982.

"IBM's East Coast, button-down corporate culture is a myth left over

'There are a lot of jokes going around the company now about IBM sending over dump trucks to fill in our swimming pool and about a "white shirt 'n wing tips" sale going on in the parking lot. People are definitely nervous. I think the jokes make them feel better.'

— Robert Berger, manager of Rolm's Marketing Literature Division.

from the 1950s," he claimed. "In matters of style and image, IBM and Rolm basically aren't that different. Line up 10 IBM managers and 10 Rolm managers, and you can't tell the difference."

Cockrum seemed pleased with the announcement. "It's a positive move, a synergy between computers and

communications. The customers will win because now we'll create better products," he said.

Some Rolm employees seemed stunned by the turn of events, however.

"It's really too soon to tell what's going to happen. I was totally surprised and shocked, though I don't

think we'll see any changes at my level for for one or two years," said George Brinkman, a customer support technician at Rolm's Field Operations Division. Brinkman confessed that IBM's stock image had him worried.

"I've never heard of IBM having beer busts and champagne outings. They don't seem to party as a company the way we do at Rolm. I'd sure miss those things if [IBM] canceled them," he said.

Judy Westphal, an administrative assistant in Rolm's warranty repair/field services department, said she had been worried until Rolm President Ken Oshman held a company-wide question-and-answer session the day of the announcement. "His speech really calmed me and a lot of other people," she said. "It was like family."

The meeting went on for hours, Westphal said, "and people wouldn't

'It's a positive move, a synergy between computers and communications. The customers will win.'

— Jim Cockrum, general manager of Rolm's Network Products division.

stop asking questions. Oshman said part of the negotiations were that IBM would preserve the unique culture [at Rolm]. That made me feel better."

Mike Harris, editor of Rolm's Network magazine, said many Rolm insiders felt an IBM takeover was inevitable after IBM bought 25% of the company's stock, but the timing was a surprise.

"They say nothing's going to

'It's really too soon to tell what's going to happen. I was shocked, though I don't think we'll see any changes at my level for one or two years.'

— George Brinkman, a customer support technician at Rolm's Field Operations division.

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COMPUTER INDUSTRY

amount of stock when he joined Rolm two years ago. "I'm really high right now. I've got to decide what to buy," he said.

According to Nolte, many Rolm employees will make small fortunes with the takeover. Nolte said he and his friends planned a modest celebration. "We'll tie one on to celebrate," he said.

'[Rolm President Ken Oshman's] speech really calmed me and a lot of other people. He said... IBM would preserve our unique culture.'

— Judy Westphal, an administrative assistant in Rolm's warranty repair/field services department.

Utilizing a company open-door policy instituted for the transition, Nolte said he went to see his manager four times in two days to discuss his stocks and tax questions.

"I have to call the [Internal Revenue Service] too," he said. "The stock situation is really confusing."

Joyce Gregory, a programmer/analyst with Rolm's Business Communications Organization division for 4½ years, expressed strong feelings of loyalty to Rolm, coupled with a prag-

'They say that this lifestyle is too good to tamper with, but that might be a story on par with "the check's in the mail."

— Mike Harris, editor of Rolm's *Network* magazine.

matic wait-and-see attitude.

"It's still business as usual for me," she said as she hurried to a lunchtime marketing meeting on the other side of the Rolm campus. "I wouldn't bail out now though," she said.

"I'm not expecting it to impact us for a while," dressed casually, Gregory said she was not concerned about

'I'm really high right now. I've got to decide what to buy... We'll tie one on to celebrate... I have to call the IRS too; the stock situation is really confusing.'

— Jim Nolte, senior technical writer.



EXECUTIVE MOVES

Richard H. Quant has been named vice-president, manufacturing of Cadillac, Inc.

Robert D. Mead has joined Lisp Machine, Inc. as vice-president, manufacturing.

Donald J. Shapiro has been named vice-president and general manager, advanced products division, and Chester C. Pennell Jr. has been named vice-president, networking and office automation products at Datapoint Corp.

Gregory L. Caste has been named

vice-president, systems and services at Magiscom Systems.

Dr. Peter E. Buse has joined Graphix Software Systems, Inc. as director of strategic technology.

Abel J. Schall has been named director of international operations at Ridge Computers, Inc.

James J. Buchenwald has been appointed to board chairman and acting chief executive officer at Synapse Computer Corp.

Adrian Kling has joined Microsoft Corp. as product manager of the Microsoft Xenix operating system.

Robert H. Vornan has been named vice-president of office information systems at Sperry Corp.

Robert E. Welas has been appointed president and chief executive officer at Multimate International Corp. Multimate also announced additions to its company management team: Richard A. Lefebvre as senior vice-president of operations and finance and Robert H. Semmurs as senior vice-president of marketing and sales.

Joseph Gayner has been elected executive vice-president of sales and marketing and chief operating officer at Tek-Com Corp.

Edward H. Browder has been named chief executive officer for Falco Data Products, Inc.

Ira Peiser has been promoted to director of electronics defense software at the avionics division of ITT.



IBM's supposedly stricter dress code. "IBM's a sophisticated company, and it knows what's important, and what's not," she said.

COMPUTER INDUSTRY

EEC to lessen high-tech gap through R&D legislation



OFFSHORE LINKS
Alonso D. Saunders

First in a two-part series.

Although Europe has established a legal Common Market, that market does not yet, in fact, fully exist because harmonization — making national laws consistent with European Economic Community (EEC) law — is still a faraway goal. The legal and marketing reality is that harmonization is a two-edged sword. The first edge cuts away at national barriers to trade,

while the second is being honed to ensure the EEC's high-technology competitive edge.

Specifically, it is well known that the EEC is acutely concerned about its weaknesses in advanced technology. The first step to close the gap was legislation that would make it easier for competitors to share research and development technology. The proposed draft of the law is reportedly to be made final by the end of 1984. Although the law's intent has been well received, many industry sources believe it does not go far enough.

The main objection is that large high-technology companies, which presumably have the greatest capa-

bility of making R&D breakthroughs, are not included. There is also criticism over the fact that market-sharing agreements, which are often coupled with R&D agreements, are not included and neither is a proposed exemption for patent agreements, although this omission could be remedied rather quickly.

To others, the good news about the law is that the preclearance procedure for joint ventures is, as in America, an idea whose time has finally come and that information technology and biotechnology ventures will probably be favorably viewed by the EEC's antitrust commission. Last, but not least, there is currently no limitation on the dura-

tion of any R&D agreement approved under the procedure.

Via the Raport program, the EEC is also investing heavily in its own sponsorship of R&D, particularly information systems, telecommunications and biotechnology. The program was funded at 1.8 billion ecus over five years starting in 1985. (An ecu is the European Currency Unit, a weighted basket of European currencies equal to approximately 80 cents.)

Millions of dollars are currently being invested in software development, micro electronics, and biomolecular technology. This program, probably one of Europe's highest profile attempts at closing the technology gap, is a joint venture of the EEC and a number of European high-technology plants, including Olivetti Corp., Philips Information Systems, Inc., CSE-Praxis and International Computers Ltd. of England, to name a few. Europe, like Japan, is forging the legal implements necessary to make itself a greater competitive force.

The Raport program also encompasses a different form of harmonization — harmonization of technology itself rather than of the laws relating to technology. This approach exists in the so-called Info-tech Standards Law, written with the assistance of the Industrial Standards Organization and the Consultative Committee on International Telephone and Telegraph. The object of the law is simply to standardize differences in equipment.

Effect of law

Some European manufacturers reportedly admit that the effect of the law will be to hinder IBM's (read America's) position, but it is also true that American firms are active in this standardization process. EEC officials have downplayed the anti-competitive effects of standardization, as have U.S. officials.

Europe's copyright laws are still governed by the Bern Convention of 1886. A discussion paper to address the impact of new technology on copyright law is anticipated by the end of 1984. Special attention will be given to home video recording and protection against software piracy, which are issues of acute importance to American companies. In the interim, the EEC will, among other things, attempt to harmonize differences between the length of time protection is allowed for EEC copyrights, royalty rates and the agency issue of the persons by whom those royalty rights are negotiated.

Regarding merger and acquisition activity, proposed regulations would give the EEC the right of prior notification and approval of mergers where sales exceeded 750 million ecus. This threshold amount is a 50% increase over the previous threshold, but there is the take-away provision of a combined market share of 20%. Adoption of this provision is uncertain this year, but the proposal, at least from the EEC point of view, is going in the right direction.

Saunders is a Boston-based attorney with a practice focusing on international marketing, antitrust issues and corporate finance.

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COMPUTER INDUSTRY

Computer Power Group establishes U.S. market base

Murdoch's investment in Australian firm helps solidify its multinational orientation

By David Glavin
CW Staff

FRAMINGHAM, Mass. — The Computer Power Group name is better known in Australia than in the United States, and one of its owners, Rupert Murdoch, is more easily identified as a publishing mogul than a computer baron.

But Dr. Ted Prince, chief executive officer of Computer Power Group Pty., Ltd., a newly established U.S. subsidiary, Computer Power, Inc., would like to change all that.

Computer Power, one of Australia's largest computer services firms with a specialty in systems software, recently set up shop in the New York Post building. The New York office will serve as a base for the privately held concern to market its products and services in North America.

Computer Power's move to the U.S. came shortly after Murdoch, the controversial Australian whose worldwide publishing empire includes the New York Post, purchased a one-third share in the Melbourne, Australia-based firm.

Prince said the company carefully evaluated the U.S. market before its decision. "For us to market anything over here, it has to be unique and totally certain for success," Prince said. "We're not here for pete's sake; we're here as businessmen."

The first product the company chose to introduce in the U.S. market was a text information and retrieval software program called Status. Prince claimed that Status is the only text retrieval package available that needs no modification of code to operate on a variety of systems, ranging from an IBM Personal Computer up to mainframes manufactured by

IBM and Burroughs Corp. Computer Power's research group in Australia is developing a natural language front-end for Status, expected to be ready sometime in 1985, he said.

The basic program from which Status was derived was developed by a government agency in Great Britain about eight years ago. Computer Power has made major modifications to the program, which is used by about 150 organizations in Europe and Asia, according to Prince.

Prince said he is optimistic about the company's chances for success in the competitive U.S. software market. He noted that the firm is working

on projects for AT&T and Boeing Computer Services Co.

Computer Power also plans to market products from other Australian high-technology companies in North America. If the company is successful in the U.S., it could play a role in expanding Australia's presence in the industry.

A major study by Australian consultants recently recommended that the government spend \$170 million (Australian) in order to establish a national strategy over the next five years to bolster its information technology industry and gain a bigger slice of the export market.

'If you want to expand, you've got to become multinational. . . . Expanding in computers means expanding in the U.S.'

— Dr. Ted Prince, chief executive officer, Computer Power Group Pty., Ltd.

Prince described Murdoch's purchase as friendly and noted that he "has left us very much on our own."

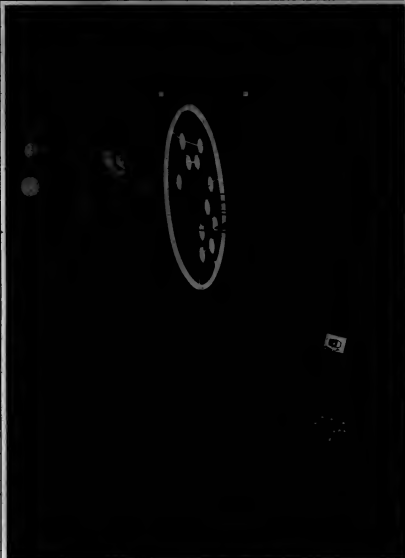
In a recent interview here, Prince said Murdoch's investment — for an undisclosed amount — helped speed Computer Power's move to the U.S. The publisher's involvement has not only helped provide a roof over Computer Power's head, but has also provided other important corporate resources. As Prince put it, "We've got all the advantages of a small company, like flexibility and entrepreneurial flair, with the advantages of a big company, too."

While Murdoch's involvement was obviously a boon, Prince pointed out that "even if we'd come [to the U.S.] without Murdoch, I still would have been confident of our ability."

Prince came to Computer Power from his job as director of data processing for Australia's Department of Social Security, where he played a key role in developing the agency's Stragplan, a giant office automation network and the largest computer project ever undertaken in Australia.

Computer Power, which has marketing arms in Europe and Southeast Asia, expects to have \$50 million in revenues this year. The move to the U.S., Prince said, is seen as a way to help the company grow.

"If you want to expand, you've got to become multinational," he said. "Expanding in computers means expanding in the U.S."



COMPUTER INDUSTRY

Edu-Ware founder files \$11.5 million suit against MSA

Suit charges MSA executives deliberately operated subsidiary unprofitably

By Steven McManaway
CW Staff

LOS ANGELES — The founder of Edu-Ware Services, Inc. recently filed an \$11.5 million suit against Management Science Associates, Inc. (MSA), which bought Edu-Ware last year.

Attorneys for Edu-Ware founder Shorwin A. Steffin charged MSA and its executives with breach of contract, securities fraud, conspiracy and violation of agreements. The suit, filed in U.S. District Court here, charged that MSA and seven executives and directors, including President William Graves and Senior Vice-President Larry Smart, violated the Securities Act of 1933 and the Securities Exchange Act of 1934.

The suit alleged that MSA made "fraudulent representations" to Edu-Ware's shareholders to in-

duce them to sell their stock in exchange for MSA stock, and that MSA made a promise of future payments, which, the suit claimed, never materialized.

MSA's Smart said the company's lawyers were in the process of responding to the charges. The company is protected by its contract with Steffin, Smart said. "We've basically got a disgruntled employee," he added.

According to the suit, when MSA made its move to acquire the small educational software publisher in July 1983, Steffin conveyed 75,000 shares of Edu-Ware stock to MSA in exchange for shares of MSA common stock.

In addition, the suit noted, MSA agreed to pay Steffin a percentage of Edu-Ware revenues and to retain the founder as an employee of MSA, working on research and development and public rela-

tions for the new software subsidiary.

However, the suit claimed several business decisions made by MSA and its directors deliberately forced depressed sales at Edu-Ware, thereby diminishing payments to Steffin which were to be based on the subsidiary's profitability.

The suit stated: "[The] defendants intentionally operated Edu-Ware unprofitably, provided Steffin little responsibility as an employee of Edu-Ware, ignored his advice and opinions, severely restricted his discretion regarding computer purchases, made many Edu-Ware personnel and staffing decisions from MSA's office in Atlanta, . . . moved all manufacturing of Edu-Ware software products to the MSA home office in Atlanta and claimed that Steffin voluntarily terminated his employment relationship with Edu-Ware."

Wang to receive AEA 1984 Medal of Achievement

PALO ALTO, Calif. — Dr. An Wang, chairman and founder of Wang Laboratories, Inc., will receive the 1984 Medal of Achievement from the American Electronics Association (AEA) at its Oct. 30 annual meeting in Boston, the AEA announced.

AEA Chairman Dean O. Morton, chief operating officer of Hewlett-Packard Co., said "Dr. Wang is being recognized for his contributions of both time and financial aid to educational institutions, the community and the arts," in addition to his technical achievements.

Wang came to the U.S. from China in 1946 and earned a doctorate in applied physics from Harvard University in 1948. In 1951, he formed his company and worked on development of magnetic core memory.

Honeywell to make array

COLORADO SPRINGS — Honeywell, Inc. announced recently that it will make a 20,000-gate Cmos gate array for a supercomputer currently under development by ETA Systems, Inc.

Honeywell said that the gate array, which has been designated the HGC20000, will be made by Honeywell's Solid State Electronics Division.

The division will use 1.25-micron line widths and processing methods, similar to those Honeywell developed for the Department of Defense's Very High-Speed Integrated Circuit Phase I program, according to a Honeywell spokesman.

Honeywell said that the firm's very large-scale integration manufacturing facility, currently under construction here, will build prototype arrays, design a high-pin-count package and manufacture production units.

The product will eventually be made available to the general market, the company said.



COMPUTER INDUSTRY

By releasing incompatible software products, IBM

By Paul Karasewski
CI Staff

An microcomputer software developers attempt to determine which operating environment to write for, they face a perplexing number of choices.

"Software developers are confused," Jacob Geller, chairman of Fox & Geller, Inc., an Elmwood Park, N.J., vendor, claimed. "It just isn't clear where the market is heading."

Much of the confusion stems from contradictory messages emanating from IBM's Boca Raton, Fla., facilities. Last month, IBM announced Topview, a window management program that seemed destined to emerge as the principal windowing system for the IBM Personal Computer. Earlier this month, IBM released graph-

printers and plotters. VDI can be stored on an operating system diskette. When the user first boots the operating system, he also loads device-driver software. Before he runs a graphics program, the user types in his micro configuration, for example an IBM Personal Computer with a color graphics board and a two-pen plotter. Device-driv-

er software notes the user's configuration. Whenever an application program requires the board or the plotter, it calls VDI, which drives the user's devices.

VDI benefits software developers and users, according to Jan Lewis, senior analyst in microsystems at Infocorp, a Cupertino, Calif., market research firm. The

developer no longer has to tailor a program for every graphics card or printer, he asserted. "VDI will do for graphics what DOS did for disk drives. Before DOS, application developers had to write to disk drive controllers. Now, they can write programs without worrying about which controller the hardware has."

A user no longer has to buy specific output mechanisms to run a program. "Not all programs support all printers," Clarkson said. "Many times a user is unable to use his printer with a program. He either has to buy a printer that works with the software or wait for the software company to support his printer."

'Historically, IBM announces a lot of products. . . . Often, the products do not work with one another.'

—Dan Bricklin,
Software Arts, Inc.

ics products for the Personal Computer, many of which do not run under Topview.

Why announce incompatible packages? "IBM tries to cover all bases," stated Dan Bricklin, chairman of Software Arts, Inc., a software company based in Wellesley, Mass. "Historically, they simply announce a lot of products. If a user wants a network, IBM offers a network. If he wants a windowing system, IBM will sell him a windowing system. Often, the products do not work with one another."

Personal Computer users had complained about the product's limited graphics, so IBM introduced a bevy of graphics products. The focal point of the introductions was Virtual Device Interface (VDI), a set of graphics tools that reportedly allow software developers to write one graphics package that can be used with a number of I/O devices. "With VDI, a graphics program produces pictures with the maximum resolution of whatever graphics card the user possesses," claimed Thomas B. Clarkson III, president of Graphic Software Systems, Inc., a computer by device VDI.

VDI is device-driver software, a term that refers to software that controls devices such as graphics boards, screen displays,

Getting a group of five or six personal computers networked isn't that big a deal. But it gets complicated when the group gets bigger. And in case you hadn't noticed, the groups are getting bigger. Fast.

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In heavy net high performance

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COMPUTER INDUSTRY

triggers confusion among developers

While Clarkson claims that VDI eliminates the problem of device dependence, it has limitations. There has to be a device driver written for the user's printer, and the application software has to support VDI. Clarkson claimed that approximately 30 VDI device drivers have been written, and 10 packages support VDI.

Opponents of VDI point out that, theoretically, operating systems provide portability for application developers, yet most programs work on only one microcomputer. Developers bypassed the VDI's operating system, claiming it worked slowly. "It made sense for a vendor to write to the hardware with [Microsoft Corp.] MS-

DOS," Clarkson claimed. "It was limited. I doubt that many programs write to the [Apple Computer, Inc.] Macintosh. They use the [Macintosh's] Quickdraw facilities. Similarly, I don't think that developers will gain anything by bypassing VDI."

Despite VDI's benefits, IBM stated that Topview does not support VDI, nor

does IBM plan to make the two products compatible.

Because of IBM's perceived wavering, some software companies may be slow to adopt either Topview or VDI. "There were a number of companies who followed IBM when it announced [PCjr]," Ericklin noted. "Many of those companies are not in business today."

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Net/One from Ungermann-Bass

Tandem
to target
airlines

CUPERTINO, Calif. —

Tandem Computer, Inc. has recently announced joint ventures to develop an airline reservations system and to market a number of application software packages for the airline industry.

Partners in the ventures are Bedford Associates, Inc., a Norwalk, Conn.-based software company; Linjeflyg AB, a subsidiary of the Scandinavian Airlines Systems Group (SAS); and Scanstar AB, a software marketing and management consulting concern jointly owned by SAS and Enstar AB, an international consulting firm.

The reservation system, Spar, was designed by Linjeflyg and will be operational in December 1985, Tandem said. Bedford will develop a standard version of the Spar system, which will be marketed in North America by Bedford and Tandem and in the rest of the world by Tandem and Scanstar.

Larry McGraw, Tandem's vice-president of marketing and service support, said the airline industry has indicated a need for Tandem's fault-tolerant, on-line transaction processing in their DP strategies. "The major airlines see a need to offload their existing systems, most of which were designed in the '60s," he added.

Honeywell
to market
Stratus line

WASHINGTON, D.C. — Stratus Computer, Inc. announced recently that Honeywell, Inc.'s Federal Systems Division will market the Stratus line of fault-tolerant systems to the federal government.

Under the terms of a cooperative sales agreement signed by the two companies, Honeywell will act as Stratus' exclusive sales agent for General Service Administration schedule contract business on a nationwide basis.

Stratus President William E. Foster said Honeywell has proven marketing resources and experience serving federal customers.

The agreement, Foster pointed out, does not preclude Stratus from bidding on competitive government procurements as a prime contractor or from working with other vendors as a subcontractor.

network traffic,
once isn't a luxury.

COMPUTER INDUSTRY

Computervision ends patent suit, pays PE \$18 million

NEDFORD, Mass. — Computervision Corp. recently agreed to pay Perkin-Elmer Corp., a Norwalk, Conn., diversified manufacturer, \$18 million in an out-of-court settlement of a seven-year-old patent infringement suit.

The lawsuit, which was originally brought by PE in 1977, charged that the former Cobilt Division of Computervision applied proprietary PE technology in the design of its CA3000 semiconductor alignment system. The suit accused the Cobilt Division (which Computervision sold in 1981) of infringing on two patents, both protecting the optics system of PE's Microalign projection mask aligner.

The U.S. Court of Appeals in San Francisco had overturned a lower court jury ruling in 1979 that the PE patents were valid, but that Computervision's CA3000 did not infringe on those patents. The case was returned to the lower court for a trial

in which PE was claiming \$40 million in damages.

Computervision had appealed the case to the U.S. Supreme Court, challenging the appellate court's right to overturn the original jury verdict, according to Richard Krieger, a Computervision spokesman. The high court had not yet decided whether to hear the case.

Computervision, a manufacturer of computer-aided design and manufacturing equipment, said the suit cost the company hundreds of thousands of dollars in legal fees.

Krieger said the company was not acknowledging infringement, but was instead recognizing that "the courts certainly believe that an in-

fringement occurred."

The two companies said they have terminated all litigation involving the suit.

Krieger said part of the settlement will be reported in the third quarter as a \$6.5 million, or 25 cents per share, charge against discontinued operations. The actual amount to be charged at the end of the third quarter is

\$13 million, he noted, but the amount will be reduced 50% by being treated as a tax-deductible expense.

In the second quarter, which ended June 30, Computervision charged \$7 million to discontinued operations of the Cobilt Division, including \$6 million for costs stemming from claims involving the lawsuit.

3 2 7 0 S T R

**You have to think
ahead a few moves to win
the network game.**

Lotus settles 1-2-3 lawsuit

CAMBRIDGE, Mass. — Lotus Development Corp. recently announced the settlement of the \$1 million lawsuit it filed in July against Health Group, Inc. that stemmed from allegations that Health Group had made unauthorized copies of Lotus' 1-2-3 software program.

Under the terms of the settlement, Health Group consented to entry of a consent decree prohibiting it from making or using unauthorized copies of 1-2-3 and related materials. Health Group also agreed to pay Lotus an undisclosed amount.

Lotus said Health Group took steps to end unauthorized copying carried out by lower level employees without the knowledge of management. Lotus said Health Group terminated the employees involved and destroyed all unauthorized copies of 1-2-3.

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COMPUTER INDUSTRY

UK's Thorn EMI moves to acquire EPS

WINDHAM, N.H. — Thorn EMI Information Technology of Great Britain recently agreed in principle to acquire Evaluation and Planning Systems, Inc. (EPS), a supplier of decision support systems based here.

Details of the acquisition were not announced pending completion of the agreement.

Chris Carter, president of EPS, said he was delighted by the agreement and was confident that the company's \$2.6 million profit for the year ended in March "will be greatly enhanced by marketing our products in conjunction with Thorn EMI's existing complementary range of business-oriented software tools."

Thorn EMI is a conglomerate with worldwide revenues of \$4.4 billion. Its revenues come from products in the areas of information technology, electronics and engineering, consumer electronics, music and screen entertainment and other interests.

According to an EPS spokesman, the combination of the EPS firm and Thorn EMI Computer Software would produce revenues of \$40 million and would consist of a staff of 400 employees.

Thorn EMI Computer Software is part of Thorn EMI Information Technologies, a company with annual revenues in excess of \$325 million.

Satellite partnership initiated

WASHINGTON, D.C. — Communications Satellite Corp. (Comsat) recently announced it had reached a preliminary agreement under which Prudential Insurance Co. of America and Douglas F. Ruhe, co-owner of United Press International, would form a broadcast satellite partnership.

Under terms of the agreement, the partnership would provide direct broadcast satellite television services using small receiving antennas. Comsat would initially own approximately half of the partnership, which would be capitalized through both equity and debt.

The agreement also stipulates that the business of United Satellite Communications, Inc., in which Prudential has a 51.9% investment, would be combined with Satellite Television Corp., a Comsat subsidiary. Both businesses would be run by the partnership.

The venture would eventually use satellites under manufacture by RCA Astro-Electronics for Satellite Television. In the meantime, the partnership would provide a subscription television service.

The transaction is subject to negotiation of a definitive agreement and final approval by all parties.

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have occurred at a semiconductor manufacturer, an insurance agent automation company, and a large New York bank.

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COMPUTER INDUSTRY

Bank to offer DP services | Data Access to reorganize

LOS ANGELES — Security Pacific National Bank announced recently that its internal operations and information services organization has been established as a new division that will do business as Security Pacific Automation Co.

The newly formed division will offer an extensive array of data processing and telecommunications services to customers, according to the bank.

The unit has a staff of 3,700 people in offices around the world and a revenue base in excess of \$300 million, including revenues related to building, designing, operating and maintaining the technology-based services for the bank's domestic and

international activities.

DuWayne J. Peterson, executive vice-president of Security Pacific National Bank's ADP Group, will be chairman and chief executive officer of the new company; and John P. Singleton, senior vice-president of the bank, will be president and chief operating officer of the data processing company.

"We have an organization that possesses the many specialized skills and expertise required to compete [successfully] in the fast-growing and dynamic information services business," Peterson said. "This step will provide the framework and the flexibility necessary to participate in this exciting marketplace."

BLACKWOOD, N.J. — Data Access Systems, Inc. recently announced that, subject to the filing of any appeals, the U.S. District Court in New Jersey had confirmed the company's plan of reorganization under the Federal Bankruptcy Act.

If no appeal is filed, or if an appeal is filed and dismissed, the plan was expected to be consummated on or about Sept. 29, according to Data Access.

Data Access, a distributor of personal computers, terminals and peripherals, will pay approximately \$36 million in a combination of cash, installment notes and redeemable preferred stock. Additionally, creditors will receive two million shares of a

new common stock and a series of warrants to purchase up to 400,000 additional shares. Existing shareholders and certain class action claimants will each, as a class, receive 200,000 shares of common stock and a series of warrants, the company said.

Data Access also announced recently that Dr. Robert G. Scanlon had been named vice-chairman of the board and executive vice-president of the company.

Scanlon was previously executive assistant to the president of Temple University in Philadelphia and prior to that had served four years as secretary of education for the commonwealth of Pennsylvania.

Sperry forms chairman office, restructures

NEW YORK — Sperry Corp. announced the forming of a new office of the chairman and a reorganization of its electronic systems operation.

Joseph J. Kroger, formerly group vice-president of information systems, was named president of the information systems group, promoted to corporate executive vice-president and elected to the board of directors.

Gerald G. Probst, chairman and chief executive officer, announced the new office of the chairman will include Kroger, Vincent E. McLean, executive vice-president and chief financial officer, and Abner B. Martin, senior vice-president of defense and aerospace.

The reorganization will replace three of Sperry's four divisions — computer systems, electronic systems and flight systems — with three new divisions called information systems, systems management and the defense products and aerospace and marine groups.

Sperry said the reorganization will consolidate operations and delegate more authority to each of its divisions.

Miniscribe cuts work force

LONGMONT, Colo. — Disk drive manufacturer Miniscribe Corp. recently announced a work force reduction of about 26% of its 2,000 employees, citing an industrywide slowdown in disk drive sales and the need to reduce operating costs.

Miniscribe announced earlier it expected to incur a third-quarter loss.

Terry Johnson, Miniscribe president, said the reductions affected 530 employees, about half of whom had been working for the company on a temporary basis.

Johnson said the market for disk drives is in a transition to a higher level of technology and expressed confidence in the firm's products developed to meet that higher level.

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COMPUTER INDUSTRY

AEA reports trade deficit for 1983 telecom industry

RALO ALTO, Calif. — U.S. imports of telecommunications products exceeded exports in 1983, producing the first negative trade balance in five years, the American Electronics Association (AEA) reported recently.

AEA estimates, derived from U.S. Census Bureau publications, reported exports of telecommunications products from the U.S. rose \$97 million in 1983 to \$1.54 billion. Imports, however, jumped by \$334 million to \$1.94 billion, producing a trade deficit balance of \$400 million, compared to a trade surplus of \$347 million the previous year.

Ralph Thomson, AEA senior vice-

president, said, "We attribute at least a portion of this reversal to the fact that major foreign markets in other countries are generally closed to U.S. telecommunications exporters."

Also contributing to the deficit, Thomson said, were increased competition by overseas competitors in the U.S. open markets and the continuing strength abroad of the U.S. dollar.

The AEA previously reported that the balance of trade surplus for electronics products overall was reduced to \$100 million in 1983 and is expected to become a deficit in 1984.



EXECUTIVE CORNER

Bobby Smith has replaced Su Huang as president of the San Jose, Calif., thin-film head manufacturing firm of Magnex Corp.

Wilfred G. Sardelli has been appointed president of the systems group of System Development Corp., a Burroughs Corp. company.

Neal J. Robinson will resign as president of U.S. Telephone, Inc., a subsidiary of United Telecom Communications, Inc., to pursue new business ventures.

Vaheed Crane has resigned as

president/chief operating officer and as a director of Computer Consoles, Inc.

Thomas Bond was named president of Micro-MRP, Inc. of Foster City, Calif.

Patrick Welch has joined Imagen Corp. as president and chief executive officer.

Hiram T. French has been named president and chief operating officer of Cadware Group Ltd.

Henry C. Montgomery has been appointed president and chief operating officer, Trilogy Ltd.; Paul McEnroe has been appointed president and chief operating officer of Trilogy Systems Corp.; and J. E. Deane was named director of Trilogy Ltd.

Patrick Courtin has been named vice-president of technology at TIE/Communications, Inc.

Genicom Corp. has announced two additions to its management team: Dennis J. Shadlock, formerly of Texas Instruments, Inc., has joined as vice-president of engineering and Robert B. Chapman, formerly of Datapoint Corp., has been named treasurer.

Paradyne Corp. has announced the following promotions: Mayne E. Marling, vice-president of network systems development, and J. Robert Brown, director of product development planning.

Chayim Herring-Marx has been promoted to vice-president, application products, at Chase Decision Systems.

David E. Holmes, formerly vice-president and general manager at Nabisco Brands, Inc., has been named group vice-president of Reynolds & Reynolds' computer systems group.

Lamda Belady will become vice-president and program director of Microelectronics and Computer Technology Corp.'s software technology program.

Joseph F. Campesello has joined Nashua, N.H.-based BKW, Inc. as vice-president of conversion services.

David L. Nettleton has been appointed executive vice-president for Decision Data Computer Corp.

Edwin Chow has been named vice-president, product management, at Synertek, Inc., a subsidiary of Honeywell, Inc.

Kenneth K. Larsen has been promoted to managing director of Western Digital Corp.'s new UK sales subsidiary.

Lee Data Corp. has announced the following promotions: Bradley A. Adams, director of lease base management; E. Michael Edmonds has joined as director, software engineering; and Michael E. Halbouty was named director, manufacturing support.

Richard Striffler has been elected chairman of the board of Regan Systems, Inc.

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COMPUTER INDUSTRY


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Information Solutions. Inc. posted a net loss of \$236,002, or 13 cents per share, on net sales of \$2.5 million for the third quarter ended July 31.

This company with net earnings of \$71,964, or 6 cents per share, on net sales of \$2.7 million for the third

quarter one year ago.

■ **SCS Corp.** reported revenues for the first fiscal quarter ended August 31 rose to \$8.9 million, a 302% increase compared with \$2.2 million in the comparable quarter last year.

Profits were \$1.1 million, or 9 cents per share, compared with \$246,000, or 2 cents per share, in the same period one year earlier.

■ **BCI Systems, Inc.** report-

ed year-end revenues of \$437.4 million, compared with \$182.5 million one year earlier.

Profits were \$11.5 million, or 91 cents per share, compared with \$6.6 million, or 57 cents per share, for fiscal year 1983.

■ **Softech, Inc.** announced revenues for the first quarter of \$7.9 million, compared with \$9.5 million for the same period last year. The company reported a loss of

\$346,901, or 10 cents per share, compared with a year-earlier profit of \$518,000, or 14 cents per share.

■ **Systematics, Inc.** reported profits for the first quarter ended August 31 of \$1.5 million, or 14 cents per share, compared with \$1.6 million, or 15 cents per share, in the same period last year. Revenues were \$21.8 million, compared with \$19 million in the year-earlier quarter.

■ **Transnet Corp.** announced revenues for the fiscal year ended June 30 of \$14.7 million, compared with \$13.1 million for the same period one year earlier. Profits were \$2 million, or 39 cents per share, compared with \$1.5 million, or 40 cents per share, in the comparable period one year ago.

■ **Applied Circuit Technology, Inc.** reported a net loss of \$692,486, or 7 cents per share, on revenues of \$1.6 million for the third quarter ended July 31. This compares with profits of \$481,582, or 5 cents per share, on revenues of \$3.5 million during the corresponding period a year ago.

■ **Ash-ton-Tate** announced revenues for the third quarter ended July 31 of \$19.1 million, compared with \$11.2 million in the corresponding period one year earlier. Profits were \$682,000, or 7 cents per share, compared with \$149,000, or 2 cents per share, in the same period one year earlier.



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Solid dollar to cut DP sales abroad

LEXINGTON, Mass. — Next year will be a "good, if not exciting, year," with 3% growth in the gross national product, a government economist told a gathering of chief financial officers from Boston-area high-technology firms at a meeting here sponsored by the American Electronics Association late last month.

On the international scene, the U.S. dollar will continue to remain strong next year, hampering the efforts of American firms to sell in foreign markets, according to economist Richard Kopcke, who is with the Boston branch of the Federal Reserve Bank.

For high-tech firms, this means "you're better off selling into the U.S. market," he maintained.

For these firms, Kopcke cautioned, the trick is to remain on the forefront of technology, rather than to settle back and say "We've spent a lot on what we've got; let's milk it," as he claimed both the U.S. steel and auto industries have done before.

Kopcke also said he is not "terribly worried" about the [federal] deficit in 1985. The deficit, he said, currently totals \$200 billion, would not justify a tax hike unless its growth were to break the 5% mark next year, he claimed. That, he said, is unlikely.

COMPUTER INDUSTRY

IBM from page 123

role. The befuddled dwarfs still trying to compete in the mainframe business all fall in the range of \$6 billion; the premier "youngster," Digital Equipment Corp., falls right in the same category.

Reins price tag

The interest that IBM reportedly will earn on its cash and liquid assets this year alone, in excess of \$1 billion, is almost enough to pay for Bolin's \$1.3 billion price tag. For any other company to dish out \$1 billion is inconceivable. Except for AT&T.

AT&T, if it really sees itself lined up against IBM, as a whole industry of analysts and consultants see it,

really needs to do something in a hurry to maintain credibility. An established supermini-computer vendor and sales network would add a little muscle to the wimpy challenge represented by the AT&T SB line of computers.

If AT&T does not act, either through acquisition or rapid rollout of new-generation products, where does that leave the computer marketplace?

Despite Akers' denials, it would leave the computer business with a massive concentration of power in certain key segments — perhaps a more massive concentration than that held by the early 20th century oil giants, which spurred the concept of antitrust regulation.

IBM holds 70% of the mainframe

market and is likely to grab more with its next-generation Sierra line. It reportedly — IBM itself will never say — earns about \$5 billion or so in sales of software; think of the big independents in software — Management Science America, Inc., Calinet Software, Inc., Informatics General Corp. and a handful of others — and together they amount to little more than goat buzzing around the giant's head.

It seems highly unlikely that the present administration will raise any obstacles to the IBM/Bolin deal. But you have to wonder how much further this situation can go.

Control major part

If AT&T fades and IBM moves solidly into the telecommunications

field, IBM will control a massive amount of the marketplace. Maybe there will be a few supermini-computer vendors on its flanks and a few micro vendors eating scraps at its feet, but IBM will have sewn up the lion's share of the information processing and communications resources of the major part of U.S. business.

In that situation, good intentions or not, IBM, just by size alone, will present a damper to free enterprise and real competition.

The champion of free enterprise, President Reagan, may not have any problem with that.

But some future administration is going to rule that excessive concentration of power is contrary to U.S. law.

**DEC** from page 123

market of BOG — companies with annual revenues from \$100,000 to \$100 million — will spend \$8 billion on computer equipment during the period from mid-1984 to mid-1985, up from \$6.5 billion for the same period the year before.

In surveys of executives representing that market, MacKenzie said, DEC has determined that small businesses have no vendor preference and are mostly concerned about the vendors' understanding of the particular vertical markets and the ability to meet the needs of businessmen in those markets. Additionally, MacKenzie said, only 16% of that market has been penetrated by computer vendors.

Market solutions

To reach that market, BOG will offer "solutions" based around equipment ranging from DEC's Rainbow microcomputer to PDP-11 minicomputers to VAX-11 superminicomputers. "We are not unknown in that market," MacKenzie asserted. "There are thousands and thousands of PDP-11s and VAX-11s out there ... and over 2,000 application packages available on PDP-11s," MacKenzie said.

To bring its "solution" message to small businesses, BOG has unveiled a market mapping program to coordinate the efforts of OEMs, dealers, retailers and Digital Business Centers in geographic regions around the country. Appointed U.S. Distribution Sales Group manager to head up that effort was Jay E. Atlas, formerly Field Service Business Group manager.

O'Keefe said the mapping program was instituted to implement sales and service strategies in each geographic area.

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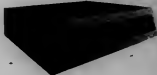
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COMPUTER INDUSTRY



SUPERPOINTS

Northern Telecom, Inc. announced that its telephone manufacturing division in Nashville has been renamed **Advanced Communications Terminals**. W. R. Moore, vice-president, terminals, has been appointed head of the new division, which is part of the company's integrated office systems operating group and will now manufacture, market and service a complete line of voice and data terminal equipment.

Apollon Computer, Inc. will open a \$2.54 million facility in Livingston, Scotland. The 34,000-sq-ft facility will house training, sales and service

and a pan-European logistics repair outlet. In the long run, the company said it intends to set up a manufacturing center.

American Satellite Co. announced the signing of a multi-million-dollar contract with **Sears Communications Co.**, a subsidiary of **Sears, Roebuck and Co.**, for a private voice, data and video teleconferencing network. The network will connect Sears corporate and subsidiary offices in 26 U.S. cities, making it the largest private satellite network in existence for full-motion video teleconferencing.

Informatics General Corp. announced the signing of a joint venture agreement with **Axelrod N.V.** to form **International Health Informatics Applications (IHIA)**. IHIA will

offer electronic access to health care information to a variety of users.

Shagart Corp. has expanded its domestic distribution sales network with the addition of **Wyle Laboratories** as a distributor of its floppy and Winchester disk drives.

Canton Automated Systems, Inc. (CAS), a supplier of data processing services, has opened a data center in Kansas City, Kan. CAS Kansas is located in Brookhollow Office/Industrial Park in Johnson County.

The Du Pont Co. and **Intel Corp.** announced their support for the development of a nonproprietary manufacturing automation protocol (MAP) standard for data communications networks to expedite factory-floor exchange of information be-

tween computers and computer-controlled equipment. Intel also announced its commitment to a broad range of products designed to assist industry efforts toward factory automation. MAP is the set of baseline standards developed to guide companies in supplying products for use in connecting automated operations in General Motors Corp. plants.

Systems Strategies, Inc. announced the formation of **Partable Software, Inc. (PSI)**, a wholly owned N.Y.-based subsidiary. PSI develops and markets portable, C language software communications packages that enable non-IBM peripheral devices, as well as a package that interfaces to COCITT's X.25 communications protocol.

The Ultimate Corp. announced the formation of a public-sector division to market solution-oriented software to municipal governments and other public authorities.

Applied Data Research, Inc., founded 26 years ago, reported that the company's stock is trading on the New York Stock Exchange. The new ticker symbol is **ADR**.

Martin Marietta Data Systems, Inc. has formed two divisions to strengthen its position in the development and marketing of computer software and its growing role as an integrator of complete systems for data management. A new information technology division combines four existing units that develop and market software and related services for commercial markets. The systems integration division will concentrate on DP systems for facility management in government agencies and for health and educational institutions.

In a move to help expand its dealer network in the U.S., **Burroughs Corp.** has adopted a new microcomputer dealer agreement that has been approved by the National Office Machine Dealers Association.

The Burroughs microcomputer dealer agreement provides for: mutually agreed upon product quotas; an open-ended term of agreement, contingent upon the timely payment of bills and achievement of established quotas; and resolution of certain disputes through an independent arbitrator.

Fujitsu America, Inc. has selected the Portland, Ore. area as the site for its new magnetic disk drive manufacturing facility. The disk plant, utilizing Fujitsu's highly automated manufacturing systems, will hire some 600 employees over the next three years. The plant is slated to start production in late 1985.

AM International, Inc. reported that U.S. bankruptcy Judge Lawrence Fisher entered an order confirming the company's plan of reorganization. AM International, which has been operating under Chapter 11 of the Federal Bankruptcy Act since April 14, 1982, said it expects cash and common stock distributions, as stipulated under the plan, will commence within the next 30 to 60 days provided that the level of allowed and disputed unsecured claims, excluding the disputed claim of one creditor in the amount of \$111.5 million, do not exceed \$275 million.

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ALASKA

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Minimum qualifications for the Programmer position: Bachelor's degree in Computer Science or related field, or equivalent experience. Minimum qualifications for the Programmer/Analyst position: Bachelor's degree in Computer Science or related field, or equivalent experience.

Minimum qualifications for the Developer position: Bachelor's degree in Computer Science or related field, or equivalent experience. Minimum qualifications for the Programmer position: Bachelor's degree in Computer Science or related field, or equivalent experience.

Interested parties should submit resumes and salary requirements to: Personnel Services Bureau, Personnel Office, Box 100, Anchorage, AK 99509.

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 January 1985

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Qualifications: To provide leadership in managing the quality of teaching programs and for the computer development and growth of the department. To teach, research, and develop and to be involved in the professional development of faculty and students.

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Send your curriculum, resume, and three copies of references by November 8, 1984, to: Dean, College of Business, Industry & Communications, University of Wisconsin-Plateville, P.O. Box 12345, (608) 935-1447.

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• 3-5 years experience in data base programming

• 3-5 years experience in data base programming

• 3-5 years experience in data base programming

• 3-5 years experience in data base programming

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These positions involve both technical and administrative support of distributed mainframe systems. Duties include software development and support, user consultation, equipment and software acquisition, and administrative duties relevant to computer center operations. Positions are available for support of both scientific/engineering and financial/administrative systems. A degree in Computer Science or Business Administration and 3 years experience with DEC VAX mainframe systems is required.

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This position involves support of telecommunications in a dynamic, distributed computer environment utilizing advanced technologies such as digital PBX, intelligent port selectors, microcomputers and files, and a network of local area networks. Duties include design and acquisition of telecommunications systems, troubleshooting, network administration, and communication software development. A degree in Electrical Engineering or equivalent experience is required. Experience with DEC-CL, Linnet, Bus, Net-Cat, and related DEC/IBM environments is highly desired.

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Responsibilities are to evaluate the purpose and processes of existing and proposed computer systems to define requirements; perform feasibility and cost/benefit analysis for new systems; prepare detail program design including flow charts, block diagrams, and screen/report layout; code, generate program test data, test and debug programs. Qualified candidate will have 1+ years RPO III programming experience on IBM System 38. Knowledge of C++ language and COBOL on IBM System 38 desired. College degree desirable.

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Design and development of real time telephone attendant, trunk control and call processing facilities.

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Design and development of configuration, control and diagnostic software for distributed processing systems.

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Design and development of real-time operating systems software for distributed microprocessor based systems. Software includes: nucleus (process and memory management), interfaces (communications), debugger, processor start-up, the management and utilities, data base communication protocols, and machine interface.

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Design and development of distributed processing software for database management, system performance monitoring (traffic measurements), call data recording (CDA), system overload management, and telephone network management.

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Design experience should include microprocessor communication interfaces, peripheral controllers and memory systems. Minimum of three years experience designing 11 interfaces, lines or trunks to digital control offices. Path for subscriber center equipment. Familiarity with 286, 386, or other microprocessors, as well as dynamic logic components is a must.

SYSTEMS ENGINEER

Will be involved in analyzing product system requirements, resolving hardware/software system architecture problems, generating system level specifications for new products and providing enhancement specifications for existing products. Will help to prepare proposals and presentations and be involved in customer interface. Must be aware of the state-of-the-art feature requirements as they apply to telecommunications, with strong background in hardware and software development and systems level design.

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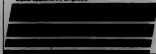
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We seek an individual with experience in data base administration. Duties will include data resource planning, data base structure, and data dictionary administration. Applicants should possess at least 6 years of experience, 4 of which should be in IDMS systems. IBM hardware and software experience as well as good communication skills are needed. A BS in Computer Science or its equivalent is desired. An MS is also preferred.

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Your duties will include subsystem design, program design, on line coding, data base update and retrieval programs. In addition, you'll also be responsible for high level language reports and the analysis, design, coding and implementation of large scale software development requirements. Requirements include strong technical skills in COBOL and IDMS, experience in high level languages, a BS in Computer Science or its equivalent and 2 years of related experience.

VAX/Harris

The Computer and Communications Systems Department utilizes Harris 880 computer systems and VAX 11/780 computer systems to support program requirements. Due to continued growth, an excellent opportunity exists for the following professional:

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This individual assist users with operating system questions, provide informal supervision for operators and maintain OS and hardware system performance. Requirements include FORTRAN and MACRO programming under VMS or experience with Harris computers as well as a BS or its equivalent. Experience with DADT/REVE, CMS, DMS-11, and PHA is highly desirable.

Harris offers an excellent compensation/benefits package, a formal merit review program, and a beautiful Melbourne, Florida location. Melbourne offers an attractive cost-of-living with affordable housing and no state or local income taxes. Send your resume in confidence to: Jeanette F. Brizel, Harris Computer, Melbourne Division Support Operations, P.O. Box 371, Dept. CV, Melbourne, Florida 32902.

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Raytheon's Equipment Division Information Processing Systems (IPS) has immediate openings for Business Application Programmers with a college degree and 1-3 years experience. Hardware utilized is an IBM 3081 computer operating in an OS/MVS environment. Software/Languages utilized are primarily COBOL, IMS DB/DC, ROSCOE, LIBRARIAN, OS/JCL and utilities.

IPS is involved in the development of Engineering, Manufacturing and Financial Business Systems, plus the evaluation and selection of user-friendly Decision Support Systems. Design/Development Methodologies and automated software generation tools are utilized to support system development.

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Suite 277
Berkeley, CA 94709
415/862-6022

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Power Systems
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PROGRAMMER/ANALYST

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You should have at least 3 years of experience with IBM CICS using COBOL, IMS, JCL, VARY, ASSEMBLER and IBM utilities. A background in CICS, Easytrieve, SAS, ROSCOE and KODAK file processing is helpful. Heavy user control requires someone with top communication skills.

We can offer a competitive salary and benefit package that includes profit sharing and dental coverage, plus excellent potential for professional advancement. For prompt consideration send your resume in confidence to: Midlantic National Bank - CPO/CIC, 95 Old Short Hills Road, West Orange, NJ 07092 or call June Kaler collect at (201) 355-0272. Equal opportunity employer M/F.

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Openings close: October 12, 1984. To make proper consideration, specify all requirements, and a cover letter. All resumes must be submitted in confidence to the Human Resources Department, 1000 North Central Expressway, Suite 100, North Central, Dallas, Texas 75208. Equal Opportunity Employer.

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POINT OF SALE
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